Value Co-creation in the Cloud

Understanding Software-as-a-Service-Driven Convergence of the Enterprise Systems and Financial Services Industries

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For my parents,

Susan Margaret and Francis Nicholas,

And for my brother and best friend,

James Francis

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E.A. Teracino
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Chapter One

Introduction

1.1. Motivation

Enterprise systems enable the flow of information within and between organizational processes and form the backbone of many businesses (Pearlson and Saunders, 2009; Engelstätter, 2012). Enterprise systems serve the needs of organizations, instead of individual users, and this has become the de facto software used in large organizations (Brown and Vessey, 2003). Enterprise systems encompass types of configurable software applications, such as enterprise resource planning (ERP) software, customer relationship management applications, and supply chain management systems. A central role is played by ERP software that integrates information and business processes in organizations (Markus and Tanis, 2000). Traditional information systems often cater to the functional units in a company independently of each other, whereas modern ERP software entails tighter interdependences between these functional units so these units can operate as a whole in real-time (Klaus et al., 2000; Ross and Vitale, 2000; O'Leary, 2000). Falling under the product software research model categorization, as given by Xu and Brinkkemper (2007) of packaged software, modern ERP software comprises of ready-made software products[1] offered by software vendors, requiring little to no modification or customization. It is widely acknowledged that a software product such as ERP software can increase a company's organizational efficiency and effectiveness (Davenport, 1998; Markus and Tanis, 2000; Zhu et al., 2004). However, how

[1] In this dissertation the term "software product" will refer to packaged enterprise systems software as per Xu and Brinkkemper (2007).

ERP software products are supplied, installed, and maintained is significantly changing because of the *software-as-a-service* (SaaS) business model (D'souza et al., 2012).

Previously, traditional enterprise systems software was installed in full and maintained on company servers and computers as a customized application after a company purchased a license. The revenues for companies selling software as a product came from licensing and maintenance fees. This made traditional ERP software deployment and maintenance for customer companies purchasing the ERP software costly and cumbersome to manage due to the pricing model. SaaS business model adoption, which is when a set of software services can be accessed and used through the internet (Dubey and Wagle, 2007), is changing both the way software vendors deploy their software and how customer companies receive and pay for these services. Typically with a SaaS business model, the software product and associated data are hosted and deployed by the software vendor for multiple end customers simultaneously. Companies that use an ERP software product can access and rent part or all of a software's functionalities online when a SaaS model is employed, often for a monthly subscription fee. This shift from licensing customized software applications to renting ERP software products online, as a service for a periodic fee, is central to the product-as-a-service pricing model (cf. NWO Product as a Service project). SaaS adoption is causing an overall shift from on premise deployment to the online deployment model (D'souza et al., 2012), and a shift towards a product-as-a-service pricing model is following suit.

A product-as-a-service pricing model alleviates the sunk cost of the license fee for the customer, replaces it with a periodical fee, and SaaS deployment takes the burden of information technology (IT) infrastructure to host the software "on premise" and IT maintenance away from the company. There has been a steady increase in SaaS business model adoption by enterprise systems vendors as a result of these benefits (Forrester, 2012).

From the vantage point of the customer, the benefits of SaaS mean their software product is completely hosted by the enterprise systems vendor and is simply accessed from an online browser. While enterprise systems are widely heralded as the backbone of any business, other essential services are needed to run a business, such as financial services. Like enterprise systems vendors, financial services firms are also following suit in adopting a SaaS model. While financial services firms' core offering is not in the form of software as is the case for the enterprise systems vendors, they can still offer most of their core services with a SaaS model all the same. Banks and accounting firms use SaaS to provide some of their services through online browsers, for example, in the form of online banking and online bookkeeping, respectively. However, these various financial services, as well as enterprise systems software products such as ERP, often remain disconnected. This presents a strategic opportunity for various kinds of service providers to integrate their services online.

SaaS simplifies the sharing of data or resources (e.g., services) *between* firms that use SaaS as a business model to serve their customers (Dubey and Wagle, 2007). Before SaaS, connections between services offered through on premise implementations needed to be initiated many times (i.e., for each party using the software). If all parties utilize SaaS, connections can be made once and can be set up to stay intact for a period of time or indefinitely. Firms then can more easily link (and therefore enhance) their SaaS offerings among each other. SaaS thus enhances the potential for connectivity in new or existing alliances, and fosters eco-system connections.

The collaborative and integrative potential of SaaS seems to go hand in hand with the trend that firms of previously discrete sectors are increasingly creating value through their business-to-business (B2B) alliances (Gulati et al., 2009). Creating value through business partners yields a higher value for customers than when the products and/or services from individual companies are

consumed separately (Sarker et al., 2012). This is better known as value co-creation (Sarker et al., 2012). Value co-creation has previously been used to denote collaboration between consumer product companies and their customers (Pralahad and Ramashwamy, 2004). In this dissertation, value co-creation will refer to companies who aim to develop added value to a market, where all participants have influence on the process and on the resulting artefact, which may be physical or informational. In this way, value co-creation is closely related to open innovation (Chesbrough, 2004), with one difference: open innovation takes the perspective of one focal company who leverages other companies' competencies or intellectual property to support their own innovation. In this dissertation, value co-creation will address the perspective of multiple companies who embark together in an effort to develop a new value proposition. This view on value co-creation therefore is closer to, and builds upon, the software ecosystems perspective which focuses on sets of actors "functioning as a unit and interacting with a shared market for software and services, together with relationships among themselves" (Jansen et al., 2010, p. 35).

With the possibility for higher quality services due to value co-creation opportunities between previously distinct industries, new markets can emerge as a result. Examples of similar nascent markets emerging at the convergence of previously distinct industries are that of the Internet, at the convergence of the computing and telecommunications industries (Santos and Eisenhardt, 2009; Teracino and Seo, 2013), and mobile gaming at the convergence of the video gaming and wireless communication industries (Ozcan and Eisenhardt, 2009). It should be noted that while some markets have either spawned from, or were disrupted by, related innovations (e.g. Amazon, Uber, Bookings), these constitute disruptive innovations which differ from markets stemming from the convergence phenomenon perspective. Disruptive innovations are when technological development or innovation "challenge industry incumbents by offering simpler,

good-enough alternatives to an underserved group of customers" (Bower and Christensen 1995; Christensen et al., 2006). With SaaS being embraced by incumbents and start-ups alike, the convergence phenomenon better encapsulates the challenges that arise as new markets emerge among previously well-defined industries. This dissertation will especially focus on value co-creation between enterprise systems vendors and partners from different industries.

While the technology aspect of SaaS enables opportunities for value co-creation between the enterprise systems and partnering industries, challenges arise. One such challenge is enterprise systems vendors can face data privacy blockades from industries such as financial services, which may hinder some options for value co-creation that require data sharing, for example (Teracino et al., 2014). A second challenge may arise as accounting firms begin to play the role of resellers of ERP software products in the SaaS era (Sarker et al., 2012). In this scenario, enterprise systems vendors will have to convince accounting firms to join their distribution network over those of other vendors. In the same vein, another challenge for enterprise systems vendors offering SaaS services will be to remain differentiated from other enterprise systems vendors offering similar SaaS services. This is because differentiation of the software product becomes more difficult as moving to a SaaS deployment model can mean a decrease in the ability to customize the software products while maintaining the advantages of enabled economies of scale (D'Souza et al., 2012). These examples demonstrate that while SaaS brings a potential strategic opportunity for firms in the enterprise systems industry to leverage value from their intra-industrial partners and enhance their own SaaS offerings, there are many challenges to be understood.

Problem Area – As the widespread SaaS adoption unfolds in industries such as the enterprise systems and financial services industries, it is unclear how these firms will adapt internally to SaaS

adoption, how they will create and co-create new value through SaaS, and how their value co-creation will be influenced by their different industrial environments.

1.2. Research Problem Statement

A growing body of academic literature on SaaS can be observed, although the technological perspective of SaaS has been the research priority over the business aspects of SaaS (Wang et al., 2016). The foci in the literature on SaaS thus far have stemmed primarily from the technological implementation of the SaaS model, and often from the provider perspective. For example, there are studies on the technological capabilities and the productivity of the SaaS vendor (Wang et al., 2016; Dubey and Wagle, 2007). Also, the client side determinants of adopting a SaaS model have been explored, to evaluate the perceptions around the technological performance of different SaaS delivery models (Xin and Levina, 2008), and between those of larger firms and small and medium-sized enterprises (Benlian, 2011). Only a few studies have considered the business perspective, however merely in regard to adjusting pricing models and the subsequent influence on a provider's incentives to invest in product development (see Choudhary, 2007). SaaS has however been shown to increase the connectivity between B2B partners and influence value co-creation activities (Sarker et al., 2012). Further, factors that influence SaaS adoption are expected to differ in various cultural contexts (Wang et al., 2016). Nevertheless, these existing studies do not provide an answer to the practical challenges that arise when firms leverage the strategic opportunities for value co-creation with partners via SaaS, nor how value co-creation will be influenced by the various firms' industrial contexts. This dissertation proceeds in finding these answers, and will seek insights from other fields and existing theories.

What is occurring between the enterprise systems and financial services industries as a result of SaaS adoption could be similar to what has occurred in other industries as a result of the

convergence phenomenon. The convergence phenomenon is when a technological evolution occurs where previously separate products or services merge into a single offering, resulting in cross-industrial collaborations and the integration of services and markets. A result of the convergence phenomenon is that of an increase in strategic partnerships in the form of inter-industrial alliances. With all parties using SaaS, connectivity between partners could increase, and this could be expected to lead to an increase in value co-creation activities between these new strategic partnerships. Product-as-a-service pricing models could also further enable value co-creation as the opportunities for referral fees (i.e., for reselling the software product) and commission based revenues are added incentives for value co-creation partners to engage.

Value co-creation is more than just the outsourcing of activities or minor customizations of services or products (Prahalad and Ramaswamy, 2004, p. 6), but involves a "symbiotic relationship between a firm and its primary stakeholders" (Kohli and Grover 2008, p. 28) wherein there is a focus on co-producing products/services (Payne et al., 2008). Value co-creation can yield a higher value for customers than when products/services from independent companies are consumed separately (Sarker et al., 2012). There has been growth in B2B partnerships for value co-creation as a result (Gulati et al., 2009). Prior research on value co-creation in B2B partnerships has only considered the relationships between firms, and has disregarded the larger industrial contexts in which firms operate (Grover and Kohli, 2012). Value co-creation in B2B partnerships therefore can be approached by the convergence phenomenon perspective, and institutional theory can be applied to take into account the larger industrial contexts of the partnering companies.

Institutional theory gives insight into the industrial contexts of firms engaging in B2B value co-creation. According to institutional theory, firms obtain legitimacy and benefits through conforming to their own institution's behavioral rules and norms (Scott, 2007; DiMaggio and

Powell, 1983), and it could be expected that the institution(s) to which the firms belong may play a role with regard to value co-creation when firms move into the SaaS environment. As firms partner and co-create value through the integration of their SaaS services, the institutional context of each (potential) partner will influence the partner's vision of the future market structure (Ozcan and Santos, 2015). This is relevant as the SaaS-enhanced enterprise systems and financial services market is a nascent market lacking structure. Further, institutional theory has been promoted as highly relevant for future information systems research (Orlikowski and Barley, 2001) and well-suited for research on enterprise systems (Berente et al., 2007; Gosain, 2004).

While the convergence phenomenon and institutional theory focus on the larger phenomenon implications of increasing SaaS adoption, the actions to adapt to changing market conditions or new technologies at the level of the individual firm remain critical research areas as well. For firms operating in dynamic markets, such as the SaaS market, adaptation is a continuous process and may be integral to sustaining a competitive advantage (Eisenhardt and Martin, 2000). In order to adapt, companies in dynamic markets have processes in place to learn new routines, which are better known as *dynamic capabilities* (Teece et al., 1997; Helfat et al., 2007). Dynamic capabilities can be expected to play a role as firms, particularly enterprise systems vendors, move into the changing SaaS environment and must adapt organizationally to accommodate the new SaaS model. Dynamic capabilities are also expected to subsequently influence these firms' abilities to leverage the growing opportunities for value co-creation. The dynamic capabilities perspective therefore is a candidate for exploring the organizational perspective on SaaS adoption.

Research Problem Statement – SaaS adoption in the enterprise systems and financial services industries has been approached by various technological perspectives in the literature. However, the value co-creation perspective is still underdeveloped. The institutional contexts of firms

adopting SaaS, as well as their dynamic capabilities, are expected to both influence value creation by individual firms and value co-creation between firms. Therefore, this dissertation has two aims: 1) to gain insights from the convergence phenomenon, and the institutional contexts of firms adopting SaaS, in order to better understand the value co-creation opportunities that the enterprise systems and financial services industries are experiencing; and 2) to gain insights from the dynamic capabilities perspective on value co-creation and empirically explore how enterprise systems vendors will organizationally approach SaaS-enabled value co-creation.

1.3. Overview of Theoretical Underpinnings

In addressing the main two aims of the dissertation, as described in the research problem statement above, both institutional theory and the dynamic capabilities perspective are applied to study value co-creation, and value co-creation is considered tangible evidence of the progression of the convergence phenomenon. One-dimensional views may omit partial explanations as to how entrepreneurial firms approach value co-creation and how change really occurs, therefore utilizing both theoretical lenses in an integrative effort to understand the convergence phenomenon and value co-creation is needed.

The convergence phenomenon in the context of SaaS adoption and SaaS-driven value co-creation presents an ideal scenario for viewing where the institutional theory and dynamic capabilities perspectives potentially collide and/or interlink in reality. The convergence phenomenon (in focus in Chapter Two) presents a scenario where two conditions are present due to a technological evolution: (1) firms of previously discrete industries must interact for value co-creation, (2) in order to enter a new market that is devoid of prior standing institutional rules and norms. This is a scenario where the role of the complementarity between action and structure, in a technological context, can be observed.

The institutional theory perspective classically has focused on structure and proposes that the motives of firm behavior extend beyond economic optimization to social obligation and justification of "rules, norms, and ideologies of the wider society" (Meyer and Rowan, 1983, p.84). The basic premise of early (neo-)institutional theory is that firms have a tendency to lean toward conformity to adhere to predominant norms, traditions and social influences in their internal and external environments, and this leads to homogeneity among firms in their structures and activities (Oliver, 1997). Thus, institutional theory would help to explain *homogeneity* in value co-creation strategies of firms of the same institution. In other words, for firms within the same institution, there is a "sense of being in the same boat" (Dacin et al., 2002, p. 51). A branch of institutional theory focusing on entrepreneurship aims to explain the reality of change in organizations and institutions and the term institutional entrepreneurship has now become synonymous with institutional change (Greenwood et al., 2008; DiMaggio, 1988). It is clear that the institutional entrepreneurs are influenced heavily by institutional contexts, either those they subscribe to or those they are attempting to change. However, the question of what institutional entrepreneurs *do*, is a question that has been receiving attention in the literature on dynamic capabilities.

In contrast to early neo-institutional theory, the dynamic capabilities perspective aims to explain both variation and change as it invokes its focus on heterogeneity of firm resource allocation and behavior (Dacin et al., 2002). The dynamic capabilities perspective stems from the the Resource-Based View of the firm (RBV), where firms gain (sustainable) competitive advantages through having valuable, rare, inimitable, and non-substitutable (VRIN) resources that are used for value creation (Barney, 1991; Mahoney and Pandian, 1992). Organizations gain (sustainable) competitive advantages through differentiation, essentially. In order to adapt when

the environment rapidly changes (as is the case with the convergence phenomenon), dynamic capabilities are the "capacity for an organization to purposefully create, extend or modify its resource base" (Helfat et al., 2007, p. 4). Put in a way more similar to that of institutional entrepreneurship, Eisenhardt and Martin (2000) define dynamic capabilities as "the firm's processes that use resources to match and even create market change" (Eisenhardt and Martin, 2000, p. 1107). Dynamic capabilities would thus help to explain *heterogeneity* of value co-creation strategies of firms on the organizational level.

While there have been efforts to bridge the institutional and RBV perspectives (see Oliver, 1997; McKague, 2011), these efforts have not considered the conditions presented by the convergence phenomenon. The new branches of institutional theory (institutional entrepreneurship) and the RBV perspective (dynamic capabilities) that address the conditions as presented by the convergence phenomenon could demonstrate that there are more interlinkages than previously explored in the literature between these two perspectives. This potential link between the two perspectives will be explored in this dissertation through addressing the role of complementarity between institutional contexts and dynamic capabilities of firms adopting SaaS and engaging in value co-creation activities.

In order to proceed, three studies have been done. Each study hones in on one of the theoretical perspectives, to allow for depth into each view: a review of the convergence phenomenon literature, an application of institutional theory, and a focus on the dynamic capabilities perspective. In the following sub-section, the main research questions of each of the three studies are discussed, under the umbrella of a main research question comprising the overarching purpose of this dissertation.

1.4. Research Approach

1.4.1. Research Questions

This dissertation will address a main research question in line with the research problem statement and theoretical underpinnings of the dissertation. The Main Research Question (MRQ) of the dissertation to be addressed is as follows:

> **MRQ -** *How can SaaS-based value co-creation in the enterprise systems and financial services industries be understood?*

The dissertation consists of two parts. Part I explores the convergence phenomenon and institutional contexts. Part II explores the dynamic capabilities perspective. In each part sub-research questions of the MRQ are answered.

Part I

To answer the MRQ, two research questions are formulated for the first part of the dissertation. The convergence phenomenon perspective is first taken to understand SaaS in light of what has happened in other industries experiencing the convergence phenomenon. One of the most well-known and long standing examples of the convergence phenomenon resides in the telecommunications, broadcast and computer industries, when the Internet allowed for the combination of services and content (Hacklin et al., 2013). This example of convergence can provide insights into SaaS's influence on the convergence occurring in other industries as well, and for this study the focus is on the case of the enterprise systems and financial services industries. The first sub-research question (RQ1) is as follows:

> **RQ1 -** *What insights can the convergence phenomenon that has occurred in the telecommunications, broadcast and computer industries provide about the convergence in the enterprise systems and financial services industries?*

This research question is addressed in Chapter Two. Chapter Two is a literature review that results in the building of a conceptual framework illustrating the convergence phenomenon from industry, inter-firm and organizational perspectives. This conceptual framework invokes institutional theory, as it is expected that institutional contexts of firms could influence value co-creation. The framework is applied to the case of the telecommunications, broadcast and computer industries where the convergence phenomenon has previously occurred. Initial insights into the convergence occurring between the enterprise systems and financial services industries are offered. In the study that follows, empirically exploring differences in the institutional contexts and how they are influencing value co-creation in the enterprise systems and financial services industries is the next step. The second sub-research question (RQ2) is then as follows:

> **RQ2 -** *How do the institutional contexts of firms influence value co-creation in the enterprise systems and financial services industries in the SaaS era?*

Chapter Three addresses this sub-research question. It presents an empirical study that explores the relationship between institutional contexts and value co-creation activities. To operationalize the institutional contexts, these are explored via the concept of (and proposed framework for) *institutional preconditions*. Institutional preconditions are the institutional contexts firms subscribe to prior to entering the SaaS market. The institutional preconditions are explored in the enterprise systems and financial services industries. Multiple case studies were done in these distinct

industries: two ERP vendors in the enterprise systems industry; and two banks and three accounting firms were studied in the financial services industry.

Part II

Dynamic capabilities are also expected to influence value creation and B2B value co-creation activities enabled by SaaS business model adoption. For this part of the thesis, the scope focuses on the enterprise systems industry. The third sub-research question (RQ3) addresses the following question:

> **RQ3 –** *How do dynamic capabilities of enterprise systems vendors influence the implementation of SaaS for value co-creation?*

Upon reviewing the dynamic capabilities literature in a literature review, a discrepancy was revealed. There is a debate focusing on the very nature of dynamic capabilities themselves, which made empirically studying dynamic capabilities for the purpose of this study difficult. This presented an opportunity to first address this debate in the context of SaaS adoption and offer a contribution to the dynamic capabilities perspective itself. The debate hinges on the nature of dynamic capabilities, where some defend that dynamic capabilities are complex routines (Teece et al., 1997), whereas others defend they must be simple routines (Eisenhardt and Martin, 2000). Conceptually it has been claimed that these natures may not only coexist, but may be interlinked, and empirical studies are needed (Di Stefano et al., 2014; Peteraf et al., 2013). This part of the dissertation will first proceed by empirically exploring this debate in the context of how enterprise systems vendors approach and adapt to SaaS adoption and how dynamic capabilities influence SaaS implementation for value co-creation.

1.4.2. Research Methods

In this dissertation, different research methods are used in order to collect the necessary data and construct analytical frameworks to answer the research questions. In each chapter the research methods are tailored in order to optimize the results to answer each of the research questions. Overall, the main overarching methodology is case study research of a qualitative nature. The reason for this is that the convergence phenomenon to be studied in this dissertation has yet to be fully understood in the existing literature. A comprehensive literature review is performed to capture insights from previous research (i.e., Chapter Two). Multiple empirical cases allow for a more transferable and robust implication for theory than a single case would (Langley, 1999; Yin, 2003), and when empirical data was a fruitful avenue and/or a multiple case study was achievable, these research opportunities were seized (i.e., in Chapters Three and Four). Within each chapter the methodologies used are described and defended in detail.

1.5. Dissertation Outline

In this section, the dissertation is outlined by chapter. Chapters Two, Three and Four correlate to the sub-research questions RQ1, RQ2, and RQ3 respectively. Here each chapter following this introductory chapter will be elaborated upon more in depth.

Chapter Two – *An Integrated Framework via the Convergence Phenomenon for the Emergence of Software-as-a-Service*

This chapter seeks insights from industries that have experienced the convergence phenomenon in order to help explain what is occurring now between the enterprise systems and financial services industries. This is a literature review that creates an integrated framework for the convergence phenomenon, enabled by institutional theory, from previously segmented literature streams. The

applicability of this framework is then viewed through a historical case where the convergence phenomenon has previously occurred. This chapter is an adapted version of previously published works. This chapter has been published as a book chapter in the *Handbook of Research on Technology Adoption, Social Policy, and Global Integration* (Teracino and Seo, 2017). An earlier version of this chapter was also previously accepted and published as a journal article in the *Journal of Global Information Management* (Teracino and Seo, 2013). Prior versions of this chapter were published in the proceedings of the International Federation for Information Processing (IFIP) Working Group 8.2 on Information Systems in Organizations held in Shanghai, China (Teracino and Seo, 2011), and published as a full research paper in the Proceedings of the Pacific Asia Conference on Information Systems held in Ho Chi Minh, Vietnam (Teracino and Seo, 2012).

Chapter Three – *Exploring Value Co-creation in the SaaS Era and the Role of Institutional Preconditions*

This chapter explores how institutional preconditions influence value co-creation in the context of SaaS model adoption. It empirically builds upon Chapter Two's framework through explorative case studies in the enterprise systems and financial services industries. It is also a culmination of previous publications in Association of Information Systems conference proceedings. A study focused solely on the banking industry was published as a full research paper in the Proceedings of the International Conference of Information Systems held in Auckland, New Zealand (Teracino, Peters and Wortmann, 2014). A similarly framed study focused on the accounting industry was published in the Proceedings of the Americas Conference of Information Systems held in Savannah, GA, U.S.A. (Teracino, 2014).

Chapter Four – *A Dynamic Perspective on Dynamic Capabilities: The Case of the Enterprise Systems Industry Before, During and After the Introduction of SaaS*

This chapter addresses a debate in the dynamic capabilities literature through empirical means. In this study, dynamic capabilities in software development at two enterprise systems companies are observed from 2011 to 2015. Taking a dynamic perspective on market velocity is done to allow for the observation of transitions in the nature of the firms' dynamic capabilities from a longitudinal perspective. The observation of transitions in the nature of dynamic capabilities would have meaningful implications for the conceptual debate on the nature of dynamic capabilities in the literature, and this is explored in this study. This chapter also considers the dynamic capabilities perspective with regard to value co-creation.

Chapter Five – *Discussion and Conclusion*

This chapter offers an overarching discussion comprised of all of the findings from Chapters Two, Three and Four, in light of the larger contribution opportunity highlighted in Section 1.3, and in order to answer the MRQ. Interlinkages between the theoretical perspectives taken are explored against the conceptual and empirical results of the three studies in culmination. Avenues for future research are also offered in this concluding chapter.

Chapter Two

An Integrated Framework from a Convergence Phenomenon Perspective for the Emergence of Software-as-a-Service*

2.1. Introduction

Previously, software was licensed as a product that customers purchased and deployed on their own premises, however more recently this has begun to change. Software companies, including ERP vendors, are beginning to adopt a new business model referred to as a SaaS model. With a SaaS model, ERP software companies manage the software product deployment on their servers and offer the software to customers as an outsourced online service, accessible via the internet. In a sense, ERP software companies are service providers. This has many benefits for both ERP software companies and their customers, and the shift to this new SaaS model has become a recent trend (Kaplan, 2005; Forbes, 2014). The majority of ERP vendors state that their intention is to move towards a SaaS deployment model (Forrester, 2012). In the same vein, banks and accounting firms are beginning to utilize SaaS principles, by offering, for example, online banking portals and online bookkeeping services. As a result, with all parties adopting a SaaS model, it has become

* This chapter is an adapted version of the following publications:

Teracino, E. A. and Seo, D. (2017). An Integrated Framework via the Convergence Phenomenon for the Emergence of Software-as-a-Service. *Handbook of Research on Strategic Information Management in the Global Economy.* Hershey, Pennsylvania: IGI Global, 280-299.

Teracino, E. A. and Seo, D. (2013). Conceptualization of the Convergence Phenomenon to Develop an Applicable and Integrated Framework for the Emergence of Software-as-a-Service. *Journal of Global Information Management. 21*(4), 1-16.

possible that banking, accounting and ERP services can be tightly integrated together and delivered to customers via a single online software solution. This combined service is henceforth called the *new integrated solution*, or *new solution*.

As a result of such technological developments and new opportunities for increased value, alliances and partnerships among companies from discrete industries are becoming increasingly popular and necessary (Gulati et al., 2009; Kohli and Grover, 2008; Sarker et al., 2012; Iansiti and Richards, 2006). Partnerships between ERP vendors and banks are an example, where an ERP software solution is integrated with banking services as an added functionality for customers. These firm collaborations surrounding a new solution can impact the solution's value (Sarker et al., 2012). For example partners in an ERP venture can be involved in the reselling, extension and delivery of the integrated software to end clients, which can impact the success of the solution. Managing these collaborations will likely become essential in this SaaS environment.

What is occurring between the software, banking and accounting industries may be similar to what has occurred in other industries as a result of the convergence phenomenon. The convergence phenomenon is when a technological evolution occurs where previously separate products or services merge into a single offering, resulting in cross-industrial collaborations and the integration of services and markets. One of the most well know and dramatic examples of the convergence phenomenon resides in the telecommunications, broadcast and computer industries, when all types of traffic (data, voice, etc.) were able to converge due to the adoption of IP, where services and content could then be combined (Seo and Sherif, 2009; Hacklin et al., 2013). The combined services and content could then be accessed from one device or terminal, an example being the varying applications on a smart phone. These new integrated services are one example of *value co-creation*. Value co-creation is when firms pursue collaboration with their business-to-

business (B2B) alliances, with the pursuit of integrating their services in order to yield a higher value for consumers than when the services from individual companies are consumed separately (Sarker et al., 2012). From the customer perspective, value co-creation allows for the possibility of accessing multiple types of data, content and services from one new solution. These new solutions that stem from the convergence phenomenon through cross-industrial collaborations are results of value co-creation activities between firms.

The importance of managing value co-creation activities in the midst of the convergence phenomenon can be seen in the stark contrast between the cases of the telecommunications companies in West Europe and Asia (mainly South Korea and Japan). The interesting observation is how companies in different nations have dealt with the same phenomenon differently. As a result, their market positions are at the almost opposite sides. In Asia, companies in South Korea and Japan adapted to the convergence phenomenon and managed value co-creation opportunities by becoming content managers earlier on (Seo and Sherif, 2009). These companies pursued value co-creation with broadcasting companies in their countries. In doing so, these telecommunication companies managed to lock in consumers. They experienced high growth through their mobile TV initiatives, where for example approximately half the population of South Korea subscribed to this new service by 2009 and this number only continues to rise (Chan-Olmsted et al., 2011). On the other hand, many telecommunications companies in West Europe are rapidly losing revenues having failed to adapt in a continually changing environment. KPN, the Dutch telecommunications incumbent, lobbied to fight for the ability to differentiate between fees for voice and data, in order to salvage its failing legacy revenue model which is entirely dependent on voice transfer. However, the Dutch government passed amendments that guarantee net neutrality, the first of this type of movement. This means telco service providers cannot differentiate between fees for voice and data

despite losing out on revenues to applications such as WhatsApp and Skype (examples of new solutions), since all data must be treated the same due to consumer privacy concerns. This further seals the fate of their revenue model and solidifies their position as a service / delivery commodity. The saliency in this example for ERP software companies lies in the fact that as a provider of new solutions, there is a danger of becoming a service / delivery commodity. This could be especially the case if the new opportunities for value co-creation brought upon by convergence are not considered. Who is to say that another ERP software company couldn't come in and replace the service providing aspect of another vendor in a few years?

To gain insight on what is occurring between the enterprise systems and financial services industries from the convergence phenomenon perspective, the convergence phenomenon is explored here where it first occurred: in the telecommunication, broadcast and computer industries. The convergence phenomenon has progressed most completely for these industries, providing the most developed picture of the complexities of the convergence phenomenon over the longest period of time. This example proves most useful in understanding convergence that may be occurring in other industries (Hacklin et al., 2013). Understanding the major aspects that have affected and caused the convergence phenomenon and their dynamic interactions may provide insight into how to approach the value co-creation happening now between the enterprise software and financial services providing industries as a result of the emergence of SaaS. The research question (RQ1) then is: *what insights can the convergence phenomenon that has occurred in the telecommunications, broadcast and computer industries provide about the convergence in the enterprise systems and financial services industries?*

The objective is to discover the main aspects that can explain the convergence phenomenon and explore their inter-relations. Studies in the convergence-related literature have focused on

environmental aspects, namely technology and regulation, whereas firm level aspects have been neglected and linkages between aspects remain unexplored (Kim et al., 2010; Veneti et al., 2012). Further, there is a need to understand these linkages and dynamics as they influence the shaping of new markets arising from convergence (Basole et al., 2015).

To understand how firms and their strategies can play a role in the convergence phenomenon, how the firm level can affect the industry level and vice-versa is necessary. The aim is to discover the relationships between the aspects that influence and are influenced by the convergence phenomenon. Four steps are taken to achieve this objective. First, a literature review and analysis are conducted with the aim of identifying the main aspects most contributing to and resulting from the convergence phenomenon. Second, a framework is developed consisting of these aspects, where the inter-relations of these aspects and their dynamics are explored via the paradigm of institutional theory and mobilization. Third, a chronological progression is presented in order to explore the framework against the historical case of the telecommunications, broadcast and computer industries. Fourth, the framework is explored for the emerging SaaS environment, and future research ideas to further develop the framework for analyzing the convergence phenomenon occurring in the enterprise systems and financial services industries are offered in a discussion.

The academic contribution of this chapter is two-fold. The first contribution is the integration, for the initial time in the literature, of all the segmented perspectives of convergence found in the telecommunications, broadcasting and computer literature into one comprehensive framework, where the inter-relations of the major aspects involved are explored with the purpose of analyzing the convergence phenomenon as a whole. The purpose of integration is to discover how the organizational and industrial levels affect each other during the convergence phenomenon.

The second contribution is the illustration of the framework against a historical case. The aim is that this framework may then be used to analyze the convergence phenomenon that is occurring in other industries and nations as well. For practitioners, the contribution is a framework to analyze an industry environment experiencing the convergence phenomenon and to consequently define strategic positioning more accurately. In addition, this study opens new insight that telecommunications and broadcasting companies in Asian countries have been much more successful in dealing with the convergence phenomenon than those in European countries and the United States (U.S.). For future research, the proposed framework can be utilized to answer why there are differences in dealing with the convergence phenomenon by nation.

2.2. Institutional Theory as a Conceptual Background for the Convergence Phenomenon

In viewing the SaaS environment as a result of the greater convergence phenomenon, we gain two main insights which are discussed as follows. The first insight gained by taking the convergence phenomenon perspective is that since firms adopting SaaS stem from different industries, this could affect how they will approach the nascent environment (Ozcan and Santos, 2015). This is because organizations within an industry adopt similar practices and structures in order to secure position and legitimacy in their environment (Scott, 2007; DiMaggio and Powell, 1983). This type of organizational behavior is studied in institutional theory (DiMaggio and Powell, 1983, 1991; Friedland and Alford, 1991), and these practices and structures are referred to as institutional logics (Thornton, 2004; Greenwood and Suddaby, 2006), or in short, logics. These logics guide an organization's behavior in various social and commercial settings (Scott, 2007; Seo and Creed, 2002). Firms from discrete industries are thus expected to have different perspectives of the environment. Agreement of the new market architecture can be a difficult process as a result of

these varying perspectives, as was seen for telecommunications, broadcast and computing industries (Santos and Eisenhardt, 2009), as well as for the video gaming and wireless communications industries (Ozcan and Eisenhardt, 2009). One difficulty is that incumbents from one industry entering the new environment may view the incumbents from other industries as new entrants into their own industry. This was the case for the telecommunications companies and broadcasters when collaborating for mobile TV (Chan-Olmsted et al., 2011). Industry-specific logics play a huge role in the progression of the convergence phenomenon (Teracino and Seo, 2013). This is most clearly seen in the case of the telecommunications, broadcast and computer industries as indicated in convergence phenomenon-related literature (Kim et al., 2010; Hacklin et al., 2013). What happens when organizations begin to participate in a new market environment, where there are no pre-defined logics to subscribe to? The second insight gained from taking a convergence phenomenon perspective is that this environment is fairly new, where logics have yet to be determined, and firms can still attempt to influence the establishment of logics. An organization cannot establish new institutional logics by itself in the case of the convergence phenomenon, but firms must jointly attempt to define the architecture of the new market environment. Firms must *mobilize* others in order to do so.

Mobilization comprises of the activities of each firm to have partners join their vision of what the institutional rules, norms and culture could look like in the new market. Each firm promotes a vision close to what the market would be (DiMaggio and Powell, 1983; 1991; Ozcan and Eisenhardt, 2009; Ozcan and Santos, 2015). Mobilization can be very difficult as desired partners may have conflicting self-interests (Park and Ungson, 2001; Narayanan and Chen, 2012; Ozcan and Santos, 2015). However if partners are convinced by the vision presented, and are sought after for the purpose of this vision, this can have an effect on the shaping of an emerging

environment to a firm's benefit (Ozcan and Eisenhardt, 2009; Droege and Marvel, 2010). The process of mobilization thus implies the involvement of multiple firms as one firm cannot accomplish environmental changes alone. Firms can seek partners with others in their own industry or from other industries.

Institutional theory can account for the industrial-level logics each firm is influenced by during the pursuit of mobilization, which can provide insight into the reasons firms would seek to establish new logics. While it is very difficult to measure the process of the institutionalization of logics in a new environment, it is possible to attempt first to observe how firms mobilize, if they decide to do so, to attempt to influence the new environment. In the next section, multiple steps are taken to conceptualize the convergence phenomenon in the context of mobilization and institutional theory.

2.3. Framework Development

There are three methodological steps taken to develop a framework, each elaborated on in separate following sections. First, a literature survey and meta-analysis are conducted with the aim of identifying the main aspects of the convergence phenomenon. When speaking about "the literature," this study is referring to articles in international peer-reviewed journals with a focus on the convergence phenomenon. This initial search focused on the industries of telecommunications, broadcast and computer specifically, as the nearly all of articles focusing on the convergence phenomenon were specific to these industries. However, due to the technical and multi-dimensional nature of the topic, journals from a variety of disciplines came up in the search, such as law, economics, regulatory policy, marketing, and business strategy (See Table 2.1 below). Some of these articles were found to be relevant to the convergence phenomenon and were

included as a part of "the literature." For instance, some articles came from high ranking management journals, such as Strategic Management Journal, and were also included. This process allowed for a variety of perspectives of the convergence phenomenon.

Keywords	**# of Articles**	**# of Relevant Articles**	**Examples of Journals**
Convergence + Telecommunications	2,118	28 through 2011	Science, Research Policy, Strategic Management Journal, Telecommunications Policy, Engineering and Technology, Review of International Political Economy, Applied Economics
Convergence + Telecommunications + Media	73	8	International Journal of Product Development., Telecommunications Policy, Journal of Information Technology, Strategic Management Journal, Journal of Media Business Studies
Convergence + Telecommunications + ICT	55	14 5 (repeats)	Telecommunications Policy, Technovation, IEEE Communications Magazine
Convergence + Digital	1,267	10 through 2011	California Management Review, Technovation, Communications of the ACM, Business Strategy Review, Journal of Marketing, Management Decision
Convergence + Gaming	35	0	
Convergence + Ecosystem	62	8 2 (repeats)	International Journal of Innovation and Technology Management, Journal of Media Business Studies, Telecommunications Policy
Convergence + Digital + Ecosystem	13	3 (repeats)	
Convergence + Fixed-mobile	29	1	Journal of Regulatory Economics
Convergence + Products	1,784 (too vague)		
Convergence + Services	4,346 (too vague)		
Convergence + Next Generation Networks	51	3 (repeats)	
Convergence + Network	3,892 (too vague)		
Ubiquitous + Computing	1,081	0	
Ubiquitous + Computing + Convergence	31	0	

Table 2.1. Keyword Search in Business Source Premier through 2016

The search included studies conducted from 1971 to 2016, in Business Source Premier (BSP) in order to capture the relevant articles. The Internet Protocol (IP) standard was introduced in 1982, however, the possible convergence between the computing and telecommunications systems was mentioned as far back as 1977 (Farber and Baran, 1977). To assure the entire possible time period of the convergence phenomenon was covered, the article search was started at 1971 to be certain. A first search was conducted from 1971 until 2011. Combinations of keywords including "convergence," "digital" and "telecommunications" proved most fruitful in filtering through the thousands of results. After 2011 research concerning these keywords grew exponentially and a more tailored keyword search was conducted for the remaining time period. A second search was done to include 2011 through 2016. Repeats, or articles that came up in more than once when searching different combinations of keywords, were not counted more than once. Prior to Seo and Sherif's (2009) exploration of the varying definitions of "convergence" from a historical and cross-industrial perspective, the definition for "convergence" varied heavily by author and time period (Srivastava and Finger, 2006). Therefore an exploratory literature search was done in stages, where after each round of results any new potential keywords that arose were then added to the search. A complete keyword search was exhausted. The main keywords that found the most relevant results were a combination of "convergence" with "telecommunications" and "media" and "ICT" (See Table 2.1 for a list of all keywords and results).

Second, collecting aspects from various studies, an integrated framework is created. The purpose of integration is to identify the inter-relations of the identified aspects. The inter-relations among the main aspects discovered in the literature are explored via institutional theory and mobilization. This mechanism allows for the continuous and dynamic nature of the aspects to affect each other simultaneously. A framework is developed including these aspects and the inter-

relations. Third, the applicability of the framework is illustrated by the historical case of the convergence phenomenon on the telecommunications, broadcasting and computer industries. A historical case is used for this assessment particularly as the convergence phenomenon occurred over many decades and is quite complex, involving multiple industries and technologies, affecting businesses, markets and users alike. A historical case provides the necessary distance to observe how an innovative phenomenon, such as the convergence phenomenon, both emerges and alters its environment simultaneously (Hargadon and Douglas, 2001). In assessing the dynamics of the framework as illustrated by this historical case, the aim is to validate aspects and explore the inter-relations. The following section discusses the results of the literature review and identifies the major aspects of the convergence phenomenon.

2.4. Literature Review

The findings of this literature review reveal that four aspects are discussed most frequently: technological evolution, regulation, firm collaborations, and standardization. Considering the paradigm of institutional theory as a basis for explaining the convergence phenomenon, aspects are categorized as either environmental, organizational or in-between, in relation to the story of the convergence phenomenon. What is meant by an environmental aspect is that an individual firm *by itself* cannot control changes in this aspect. These changes occur and affect the environment under which firms operate. These aspects could potentially be an institutional logic, or a disruptive innovation, for example. An organizational aspect is an aspect an individual firm can alter directly. This includes internal organizational changes made by individual firms, which are often as a response to changes in environmental aspects. An in-between aspect is an aspect that has the properties of both an environmental and organizational aspect, which is explained by mobilization.

An example of this could be if firms mobilize with the purpose of causing changes in an environmental aspect. The research streams surrounding these aspects as per the literature are discussed as follows:

2.4.1. Environmental Aspects

Technological Evolution

Technological evolution is mentioned in all of the articles retrieved, as it is widely accepted as the main environmental aspect necessary for the convergence phenomenon (Kim et al., 2010; Mueller, 1999; Stieglitz, 2003). It includes digitization, advancements in standards, and network convergence to IP, which allowed for the convergence phenomenon's inception (Kim et al., 2010; Evens, 2010; Hacklin et al., 2013). The possibility of inter-industry convergence between the industries of computers and telecommunications was first mentioned by Farber and Baran (1977), which initiated the convergence research in the area of Information and Communications Technologies (ICTs). The focus began with the convergence of ICT products and markets (Nora and Minc, 1980), as a result of the technological evolution. It was still uncertain how pervasive this technology evolution would be (Lanzolla and Anderson, 2010). The real hype surrounding convergence began with the pervasiveness of the Internet in the late 1990s, much later than researchers and practitioners had predicted (Gambardella and Torrisi, 1998; Blackman, 1998). The advent of the internet and its pervasiveness since has amplified the benefits of network effects and externalities, and increased the desirability of convergence (Pitts III, 1999; Shy, 2010; Bores et al., 2003; Yoffie, 1996) from an economic perspective. This sparked further inquiries as to if there were other drivers of convergence, other than the technological evolution.

Regulation

Regulation refers to governmental or institutional laws or policies that hinder or foster competition, for example, international tariffs, competition principles, funding and subsidizing stipulations, network access and content broadcasting limitations, and licensing conditions (OECD, 2004). The types of regulations naturally vary by industry. Regulatory discrepancies can be seen in the example of content, which is not regulated in the telecommunications or computer industries, however is highly regulated in the broadcasting industry (Blackman, 1998; Lin, 2013). With regard to technological evolution, the telecommunications and broadcast industries are highly regulated industries, where regulatory governmental policies affecting licensing and barrier entries have played a role. Regulation is noted in this segment of the literature as affecting policies and access to the Internet in a limiting way (Golding and Murdock, 2001; Nora and Minc, 1980, Fabar and Baran, 1977; Bangemann, 1997; Lin, 2013), creating unfair competition between players in different industries (Humphreys and Simpson, 2008; OECD, 2004). This has resulted in varying perspectives as to regulatory needs and perceptions of deregulation for the new environment emerging as a result of the convergence phenomenon, as regulations tend to lag behind the technological evolution (Blackman, 1998; Lin, 2013). Discrepancies in regulatory approaches by different judicial bodies within one country alone can even be seen in the examples of attempts at regulating new outlets for broadcast in Singapore, like Internet Protocol Television (IPTV) (Lin, 2013) and mobile TV (Curwen and Whalley, 2008; Lin, 2010). Regulations have also been noted as playing an important role with regard to technological standardization as well (Steen, 2011).

2.4.2. Between Environmental and Organizational Aspects

Firm Collaboration

Collaboration can be defined broadly as any two or more firms coming together to work towards a particular goal. Collaborations could take the form of firms partnering for Research and Development (R&D) and joint-ventures for value co-creation, acquiring each other for the purpose of gaining more access over the production and/or value chains, and/or cross-industrially tapping into a new market (Chan-Olmsted, 1998; Mueller, 1999; Daidj and Jung, 2011; Hacklin, 2013). Additionally, it could simply be an informal alliance for positioning purposes. There are two specific research focuses within firm collaboration that arose in the literature review on the convergence phenomenon: mergers and acquisitions (M&A) and standardization.

The first stream of research within firm collaboration is that of M&A. In the telecommunications and broadcast industries, as an after-effect of the deregulation acts that occurred in West Europe and U.S. in the late 1990s and early 2000s, M&A constituted one of the focuses representing one of many forms of firm collaborations. M&A provided a speedier method of vertical growth in a time when it was necessary to implement new technologies and speed up R&D activities (Eunni et al., 2005; Pitts III, 1999; Warf, 2003; Sullivan and Jiang, 2010), and reaching the customers of another firm was a profitable way of doing so (Chan-Olmsted, 1998; Chan-Olmsted and Kang, 2003; Lee, 2003). A few empirical analyses on the M&A demonstrated an increase of M&A during the post deregulation in the U.S. (Chan-Olmsted, 1998; Chon et al., 2003; Grover and Khawaja, 2003), which illustrated a link between deregulation and M&A within industry and cross-industrially, as firms prepared for a new converging environment.

The second stream of research within firm collaboration is that of standardization. A standard is technical specifications adhered to by a producer/firm/party, as a result of a formal negotiation/agreement (*de jure*) or as determined by the markets (*de facto*) (Oshri and Weeber, 2006; Besen and Farrell, 1994). Changes in the way standards were created and adopted, in their interoperability and compatibility levels, and how these changes affected competition and collaboration among firms are an important aspect of the story of convergence (Vercoulen and Van Wegberg, 1998). It was found that 34% of the objectives to have partnerships were focused on controlling emerging technologies (e.g. standardization) (Grover and Khawaja, 2003). Networking with those outside of one's industry in this emerging environment became increasingly more important for positioning purposes related to standards (De Laat, 1999). Standard-setting alliances despite competitive stances of firms are common in this new emerging environment (Van Wegberg, 1996; Lin, 2013). Oshri and Weeber (2006) further researched the both cooperative and competitive hybrid of collaboration during standards-setting activities of those involved in the Wireless Information Devices Operating System (WID-OS) battle on smart phones. They demonstrate that these types of collaborative partnerships, which could be a hybrid of both *de jure* and *de facto* at the different stages of standardization, became more attractive for firms as technology became more complicated and costs of R&D increased over time.

2.4.3. Organizational Aspect

This organizational aspect includes internal strategies, financial and pricing model alterations, reorganizing of internal labor, utilizing outsourcing, developing new products and/or entering new markets, among others. Prior research, in literature streams such as business value of IT and strategic information systems, placed emphasis on how individual firms could leverage IT to create

greater value from their IT investments, on their own (Grover and Kohli, 2012). The literature largely approached the organizational changes firms experience from the technological perspective of adoption, and the factors that surround technology adoption (Grover and Kohli, 2012). Many of these studies were framed through Porter's (1980) industry structure view. Contemporary markets that now result from the convergence phenomenon, where industry structures are blurring, increasingly call for the need for firms to co-create IT-enabled products and services (Barrett et al., 2011). This puts an emphasis on inter-firm dynamics. From a business perspective, individual firms alone cannot keep up with increasing specialization demands and building the infrastructure for new services that can compete with the new solutions (Grover and Kohli, 2012). The organizational changes firms make can influence the IT value they individually can create from a technology evolution, which also then can influence their compatibility with other firms (technologically and competitively). These changes and subsequent consequences are industry specific however, particularly in the case of the convergence phenomenon where there are differences in the environmental aspects affecting each industry. Further, to understand the broader phenomenon, the mobilization among firms on the inter-firm level is important as for firms to have an impact on the new market they must mobilize with others. As a result, an industry perspective is taken in this study, and the organizational changes on the firm level will be reflected upon instead by the external actions of firms regarding firm collaboration.

2.4.4. Other Aspects

User demand as an aspect comes up in a few of the studies, mainly from the user perspective. The user demand for the "dedicated product" (e.g. just a phone or camera) and "convergence product" (e.g. a camera phone) is explored (Han et al., 2009). It is found that when the user is pursuing

convenience goals (mobility and portability), the "convergence product" is more desired, and when the user is pursuing functional goals (e.g. a professional photographer), the "dedicated product" is more desired. It is also found that the majority of users have strong demand for integrated products, contributing to the progress of convergence (Kim et al., 2010). This aspect will not be included in the framework, as an industrial perspective is taken.

The literature review reveals that studies pertaining to the convergence phenomenon are segmented, in that they emphasize different perspectives and/or focus on varying contexts. In order to integrate these perspectives, their inter-relations must be determined. In the following section mobilization as a mechanism of institutional theory is used to link the aspects together to create a framework.

2.5. Framework

To allow for the framework to be transferable and applicable in other research contexts, firm collaboration represents mobilization, since the concept of mobility encapsulates the dualistic properties of firm collaboration as a "between two levels" or in-between aspect of the convergence phenomenon. The dualistic property of the concept of mobilization allows for the ongoing reciprocal interactions between technological developments and organizational changes, as mediated by institutional context(s) and the reflexivity of the firms experiencing the technological changes (Orlikowski, 1992). The institutional contexts, represented by regulation in this case, is renamed to "institutional logics" as regulation represents just one of the many forms of institutional practices and structures firms adhere to, or "logics," that define an institutional (Thornton, 2004). Broadening regulation to include other forms of institutional logics allows for greater

transferability of the framework. The framework can be seen in Figure 2.1. Next, each relationship in the framework is described.

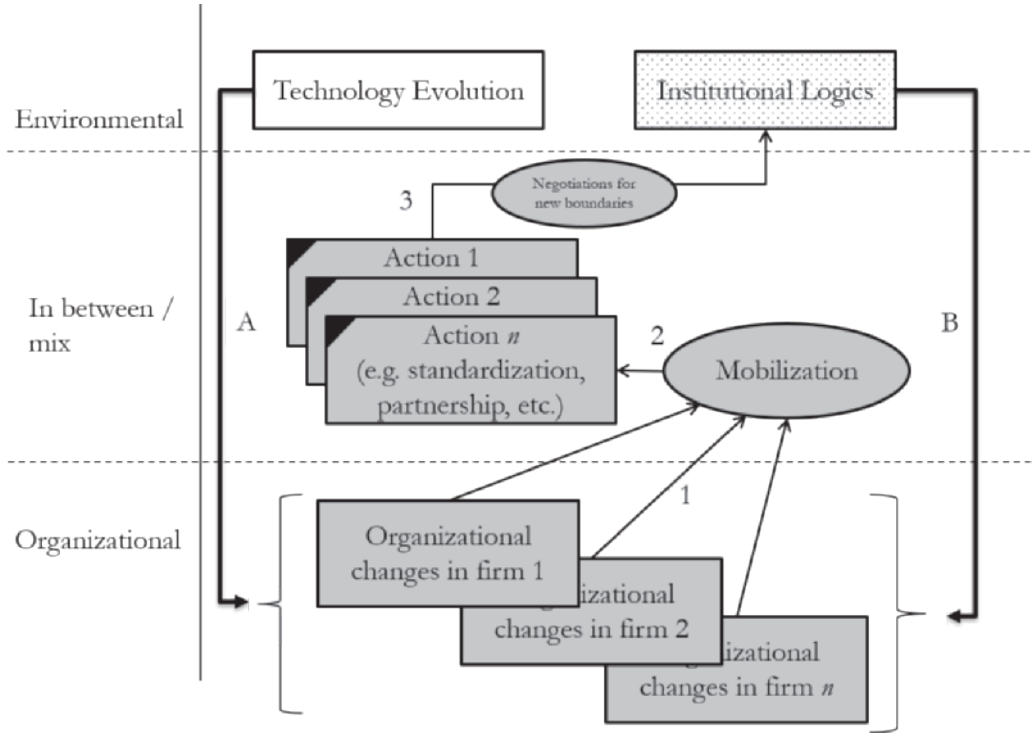

Figure 2.1. Framework for the Inter-relations of the Main Aspects Contributing to, and Resulting from, the Convergence Phenomenon

- Relationship A: This triggers the beginning of the framework. Technological developments are constantly affecting firms leading to changes on the firm level (for example, adopting a new technology or a new business model).
- Relationship B: The institutional logics firms adhere to in their industry continually influence organizational changes on the firm level. Regulations are the institutional logics which represent the environmental aspect in this study.
- Relationship 1: An organizational change is transferred into a strategic mobilization effort and/or intent.
- Relationship 2: This represents various forms of mobilization, some examples being the formation of strategic partnerships or alliances, or technology standardization efforts.

- Relationship 3: This represents when firms collaborate with the purpose of creating entirely new institutional logics, and firms negotiate these new logics with other mobilized firms.

As firms move through the relationships in order, one dynamic loop or cycle of institutional theory can be observed. Conceptually, the cycle begins with relationship A, where the technological evolution influences firms on the organizational level. Relationship B is continuously occurring theoretically via institutional theory, where institutional logics are influencing firms subscribing to said institution. To ideally optimize mobilization opportunities conceptually, the cycle moves from relationships A (and B) towards relationship 1 where firms organizationally adapt (to relationships A and/or B) resulting in a strategic decision and/or intent. The strategic decision and/or intent then would result in relationship 2, an actual mobilization activity. By way of this path, then relationship 3 can subsequently occur, where mobilization actions lead towards negotiations between firms and/or mobilized groupings of firms, to produce the new logics of the new market. When the previous institutional logics are changed or new ones created, the cycle of the framework is complete and a subsequent cycle begins. These inter-relations will be further explored and the framework is illustrated by the historical case of the telecommunications, broadcast and computer industries in three upcoming sections: before, during and after the convergence phenomenon. A list of references used specifically in the upcoming interpretation of the framework are listed in Appendix A.

2.6. Before the Convergence Phenomenon

2.6.1. Relationship B: regulations influence firms

Telecommunications

Telecommunications companies had their own network protocols and standards that were used to deliver their content to end-users during the pre-digitization era without interoperability with other networks. In most countries, the environment was entirely monopolistic and state-centric (e.g. in the EU). Monopolies (e.g. KPN, Deutsche Telekom, France Telecom) had exclusive control over the production, service, network, installation, maintenance, etc. that were vertically integrated. While network access was regulated, content was not as it was considered a privacy issue. The original business model of the telecommunications companies in the past focused solely on the service of analog voice transfer. This model thrived via economies of scale (guaranteed more or less by the state) and network externalities.

Broadcast

The broadcasting industry was traditionally viewed as a public service in most countries up until cable technologies became more mainstream. The environment was also that of an oligopolistic and monopolistic nature. Content was regulated heavily along with network access. Content was a major regulatory concern where broadcast was strictly considered a public service, which adds the element of nationalism to the mix, creating high entry barriers. Thus, a typical broadcast business model pre-phenomenon relied on government funding and advertising revenues. For both the broadcast and telecommunications industries, institutional change could occur within each industry through mobilization, where firms could mobilize to petition or lobby regulators for their own industry for example, if their interests were not being met over time. These mobilization

efforts and changes thus were industry-specific before the convergence phenomenon, denoting one version of relationship 3, when firms mobilize with the purpose of creating or changing institutional logics and negotiations occur between mobilized groupings, in the framework.

Computer

The computer industry was not held to the regulatory policies or laws of the telecommunication or broadcasting industries.

2.6.2. Technological Evolution

As technologies developed, this introduced the possibility to increase network externalities, with unregulated content and access. The technological evolution consistently progressed with the move from analog to digital, 1G to 2G, and advances in coaxial cables coupled with decreasing processor prices. The Internet soon entered the environment, creating a new delivery channel, among many socio-economic implications. IP became the standard of the internet in 1982, and of convergence (Mueller, 1999), allowing for separate networks to inter-network. The internet would quickly change the way firms from all industries would deliver their services and products.

2.7. During the Convergence Phenomenon

2.7.1. Relationship A: the technology evolution is affecting firms directly

Individual firms, in transitioning to and adopting the TCP/IP standard, have made organizational changes, which is represented by relationship A in the framework. As technologies developed, all forms of content could be delivered in the same file format over the same standard (e.g. Voice-Over-Internet-Protocol, Webcasting). This set up the possibility for, and the anticipation of, the

"multimedia industry" (Oshri and Weeber, 2006), where all forms of content would be deliverable via the same file type due to convergence on the network level.

Once convergence existed on the network level, the potential to substitute services between industries became feasible, and content was becoming scalable (Oshri and Weeber, 2006). The telecommunications companies now could compete with providers in other industries (e.g. Internet services, wireless communications), while broadcasters, or content providers, could distribute their content via different networks despite the type of content. The telecommunications companies, broadcasters and firms in the computer industry adapted to and approached this differently, as the traditional business boundaries between firms in different industries began to break down and blur (Yoffie, 1996).

2.7.2. Relationship 1: where an organizational change is transferred into a strategic mobilization effort

The differences in the structure of organizations, whether vertical or horizontal, regarding their value chains before the blurring of these boundaries, affected how firms approached this new situation. A vertical value chain denotes that the organization conducts and/or controls most of the value chain processes/activities in the chain. A horizontal value chain is a chain formed by multiple independent firms that control one or more of the process/activity components of the chain. For the telecommunications companies and broadcasters, both of which came from industries with a predominantly vertical organizational preference, perspectives on potential strategies for dealing with convergence focused on vertical integration (Rangone and Turconi, 2003; Blackman, 1998). Competitive advantage was thought to have been maximized if the horizontal components of these new technologies could be vertically integrated (Blackman, 1998). On the flip side, the computer

industry focused on the opposite strategy, where firms in discrete industries would focus on specializing in one or a few horizontal components of the value chain instead of vertically integrating (Yoffie, 1996; Mueller, 1999).

2.7.3. Relationship 2: various forms of mobilization

Mergers and Acquisitions

The telecommunications companies and broadcasters, preferring vertical integration, experienced a lot of M&A at this time. A more extreme example of this strategy can be seen in the M&A increase in the United States promptly following the Telecommunications Act of 1996 where telecommunications companies were the most active in acquiring other players (Chon et al., 2003). Consolidations between cable and telecommunications companies immediately reflected the results of this deregulation (Chon et al., 2003). Deregulation had blurred the line between communication providers and distributors, an example being AT&T purchasing Media One and TCI to acquire access to local cable. The M&A between telecommunications and internet companies, some of the bigger transactions of this time, reflected the results of digitization (Chon et al., 2003). For example, AT&T bought stake in Net2Phone, a long distance provider over the internet, in order to vertically integrate this new form of service offering (Grover and Khawaja, 2003).

Standardization

Firms in both the telecommunications and broadcast industries have tended to standardize technologies in a *de jure* method, prior to developing their products and/or services, which requires more time and negotiation efforts between firms (Seo, 2007). This can take longer, but saves resources later on. This means more coordination between firms within this industry, which may

also contribute to the preference for vertical integration and M&A methods. On the flip side, firms from the computer industry tended to develop their products and services first, and then compete in a *de facto* way later for their standard to become the dominant one (Seo, 2007). This means these products and services reach the market faster, but they run the risk of having another standard chosen as the dominant standard. Enacting a hybrid of *de jure* and *de facto* methods for standard setting activities has emerged as a result of the convergence phenomenon (Oshri and Weeber, 2006). This can be seen when standard setting activities are broken down into the development and sponsorship stages, where alliances between competitors have been seen in the development stage, while the sponsorship stage has been marked by a predominantly cooperative nature (Oshri and Weeber, 2006).

Alliances and Partnerships

In South Korea and Japan, the telecommunications companies and broadcasters didn't focus on M&A as a method, nor did they see differences in their standardization strategies, but instead created alliances and partnerships cross-industrially for the purpose of pursuing value co-creation. The South Korean government imposed *de jure* standards for mobile TV as a new market began to grow due to the convergence phenomenon and the increasing pervasiveness of smart phones. Smart phones had become a prevalent access point to access various services. In this case, the telecommunications and broadcasting industries were both involved in the development of this market in Asia via alliances and partnerships. The development of a new market or environment is an indication of the beginning of relationship 3.

2.7.4. Relationship 3: when firms mobilize with the purpose of creating or changing institutional logics and negotiations occur between mobilized groupings

To illustrate how firms mobilize and create a new market, a case among South Korean companies is a good example (Chan-Olmsted et al., 2011). The South Korean telecommunication companies and TV broadcasters illustrate differences in industry-specific strategies. The broadcasting incumbents (e.g. KBS and MBC) were initially faced with new competition coming from the telecommunications industry incumbents (e.g. SK Telecom) over content and access respectively (Chan-Olmsted et al., 2011). To avoid cannibalization with existing financial models based on voice and messaging applications, it was important for the telecommunications companies to find services that were technologically feasible. They saw mobile TV as strategic entry point into broadcast (Chan-Olmsted et al., 2011). Essentially, the telecommunications companies became content managers in efforts to differentiate their services and themselves in the new environment in order to avoid becoming a commodity. From the broadcaster perspective, alliances with fellow broadcasters were initially more natural due to having similar business goals; however alliances with mobile service providers were a necessity due to a need for technological information and access (Chan-Olmsted et al., 2011). In order for firms of both industries to enter the new market, they needed to mobilize others. Exclusivity in alliances and partnerships between mobilized partners for this new market was an advantage, to allow for the differentiation of service offers via exclusive content. Once these mobilized groupings were established, they then entered a phase of competition for market share and potential negotiations between these groupings could occur regarding defining the market logics for the longer term.

2.8. After the Convergence Phenomenon

By becoming content managers earlier on, South Korean telecommunication companies and broadcasters were able to adapt to the changing environment and differentiate themselves within a new market. On the other hand, many telecommunications companies are rapidly losing revenues, particularly in Western Europe. With new policies put in place that protect content privacy of consumers, this only further seals the fate of those telecommunications companies who still operate with legacy business models based on voice transfer. Those who mobilized into a new market are thriving, those who did not, are too late. In hindsight, a "do-nothing" strategy, when a convergence phenomenon is inevitable, leads to failure (Ho and Chen, 2009; Hacklin et al., 2013). Regarding the computer industry, results of value co-creation activities such as WhatsApp and Skype are continuing to thrive due to the market growth of smart phones.

While mobilization efforts have commenced (relationship 2), no definitive logics have yet been established (relationship 3). There are mobilized groupings, as in the case of mobile TV, however negotiations for how this market should be developed are evolving. Thus a full cycle of the framework (see Figure 2.1) has yet to be observed.

2.9. Discussion

With the main aspects of the convergence phenomenon identified and their interlinkages illustrated against the historical case of the telecommunications, broadcast and computer industries, the integrated convergence phenomenon framework can now be used to answer research question (RQ1): *What insights can the convergence phenomenon that has occurred in the telecommunications, broadcast and computer industries provide about the convergence in the enterprise systems and financial services industries?* While a full cycle of the framework was not observed for

the case of the convergence in telecommunication, broadcasting and computer industries, there was evidence of the cycle. First, technological developments on the network level, i.e., IP becoming the network standard, challenged companies to change (relationship A). Institutional logics such as regulations continuously influenced the organizational changes (relationship B). Following relationships A and B, the organizational changes were transferred into an inter-company strategic mobilization effort and/or intent (relationship 1). Next, mobilization activities occurred on the inter-company level, including standardization or partnering actions (relationship 2). It is significant to notice that there were great differences between companies in Asia and those in the West. The differences in how the institutional regulations influenced organizations (relationship B), rooted in cultural differences between the countries, played a large role in how firms mobilized and pursued value co-creation activities. When deregulation occurred (representing a change in relationship B), the Western firms mobilized via organizational and inter-firm actions towards M&A strategies (relationships 1 and 2). In contrast, this deregulation did not influence the Asian telecommunications and broadcast companies, and they enacted more exclusive partnerships and alliances for value co-creation instead.

The convergence phenomenon is beginning to occur between ERP software companies, banks and accounting firms, however the convergence phenomenon has yet to reach the phase in the convergence phenomenon framework cycle that the telecommunications, broadcast and computer companies have. Thus far it can be seen that technological developments on the application level, i.e., SaaS, are challenging companies to change (relationship A), and this is triggering the convergence phenomenon cycle for the industries in focus. There has been an increase in the adoption of SaaS by all parties (relationship 1), and at present, value co-creation activities can be observed between these industries (relationship 2). However, based on the

historical evidence, it is likely that the convergence phenomenon will evolve differently where there are significant differences in institutional pressures (such as regulation) between the converging industries. Future studies should hone in on the role of the differences in institutional logics, and the effects these differences have on the convergence phenomenon cycle path and the outcome. The proposed framework can be used in future research to analyze how companies in different institutional settings mobilize each other to enact changes within their own institution(s) and negotiate logics in the new market(s) resulting from the convergence phenomenon.

2.10. Conclusion

This study addresses the lack of an integrated framework that could be used to analyze the progression of the convergence phenomenon as a whole, in multiple industries experiencing the convergence phenomenon at different paces. To approach this, the main aspects of the convergence phenomenon were identified through a literature review. Their inter-relations were established through institutional theory and the concept of mobilization. These are used as a conceptual background for the convergence phenomenon, as well as in upcoming studies in this dissertation. In exploring the relationships established in the framework through the historical case of the convergence phenomenon's effects on the telecommunications, broadcast and computer industries, the linkages between the main aspects were explored. While the case of increasing SaaS adoption in the enterprise systems and financial services industries has not reached a similar level of convergence than the telecommunications, broadcast and computer industries have, it can be noted that there is a danger for ERP software companies of becoming providers of commodity services and/or potentially losing their core business altogether. There is an emphasis on the importance of the management of collaborations when pursing value co-creation, and also on the

disparities in institutional logics (namely regulations) among firms of discrete industries, which play an important role.

Limitations in the research include focusing primarily on the telecommunications, broadcast and computer industries when discovering the main aspects of the convergence phenomenon. There is a need for the framework to be further corroborated against the enterprise systems and financial services industries experiencing the convergence phenomenon, to discover missing aspects and/or linkages between these aspects that may be relevant to this specific context. The framework could also be further corroborated against the cases of music, biopharmaceuticals and "functional foods," e-health, nano-chemistry, and energy smart grids, where the convergence phenomenon is beginning to occur as well. Further, the organizational perspective was not considered despite including an organizational aspect into the framework. A deeper inclusion of an organizational perspective could greatly contribute to the framework's salience, and lend insight as to how firms could better manage various mobilization efforts. Finally, this research did not include empirical data. Empirical studies, such as case studies at ERP software companies, banks and accounting firms mobilizing could further refine the framework and provide deeper insight to the mobilization occurring between these industries. Accordingly, Chapter Three empirically studies the convergence phenomenon between the enterprise systems and financial services industries, with the inclusion of the organizational aspect, and Chapter Four provides an even deeper understanding of the organizational perspective through comparative case studies at two ERP vendors.

Chapter Three

Exploring Value Co-creation in the SaaS era and the Role of Institutional Preconditions*

3.1. Introduction

A growing trend in today's business environment is that firms are jointly creating value through their business-to-business (B2B) alliances (Sarker et al., 2012). This is particularly noticeable in the information technology sphere with companies increasingly utilizing value co-creation principles (Ramaswamy, 2009). *Value co-creation* is more than just the outsourcing of activities or minor customizations of services or products (Prahalad and Ramaswamy, 2004, p. 6), but involves a "symbiotic relationship between a firm and its primary stakeholders" (Kohli and Grover 2008, p. 28) wherein there is a focus co-producing products/services (Payne et al., 2008). Value co-creation can yield a higher value for customers than when the products/services from independent companies are consumed separately (Sarker et al., 2012) and as a result there has been growth in these forms of alliances (Gulati et al., 2009).

In previous literature value co-creation was studied mainly as occurring between a firm and its customers. More recently this focus has shifted towards value co-creation in a business-to-

* This chapter contains elements of the following publications:

Teracino, E. A. (2014). Institutional Preconditions Influencing Accounting Firms Mobilizing into the Online Software-Enhanced Financial Services Market. In: *Proceedings of the 20th Americas Conference of Information Systems*.

Teracino, E. A., Peters, K. and Wortmann, J. C. (2014). Institutional Preconditions Influencing Banks Adopting Software-as-a-Service and Mobilizing for Servitization. In: *Proceedings of the 35th International Conference of Information Systems*.

business context, or B2B value co-creation. B2B value co-creation has been shown to be important for competitive advantages in various industries, e.g. the enterprise systems and financial services industries (Sarker et al., 2012; Teracino and Seo, 2013). However, B2B value co-creation is complex and there is still much to be known (Grover and Kohli, 2012).

Information technology (IT) has been shown to influence value co-creation (Grover and Kohli, 2012; Rai and Tang, 2014; Sarker et al., 2012). Previous research has shown, through the lens of the Resource-Based View of the firm (RBV), that when the IT capabilities and compatibilities of the B2B alliances are well-aligned, or when the alliance's collective IT capability is strong, higher value co-creation can be reached (Ceccagnoli et al., 2012; Sarker et al., 2012). A trend through which the IT capabilities of enterprise systems and financial services firms are increasingly converging, and could foster value co-creation, is SaaS. A SaaS model is when a firm hosts and deploys software and associated data for multiple end customers, who access and rent part or all of the software's functionalities online. While SaaS could likely contribute positive effects on value co-creation, other challenges remain.

The RBV perspective can help explain the value co-creation as resulting from the alignment of the resources two partner firms bring to the table (Das and Teng, 2000), however, the degree to which value co-creation occurs is subject to contextual factors that are not considered within the RBV perspective. Other perspectives are needed to view the whole phenomenon (Sarker et al., 2012; Grover and Kohli, 2012), especially when firms in different industries adopt SaaS and can more easily engage in inter-industrial alliances for the purpose of value co-creation. For example, if firms are dominant incumbents in their respective industry, they may struggle with the inter-dependency necessary for value co-creation and may disagree with others on a joint product architecture for the new market (Ozcan and Santos, 2015). Therefore, besides investigating the

shared IT capability, Sarker et al. (2012) studied the influence of governance mechanisms between B2B partners on value co-creation and the effect of the power and politics between enterprise systems firms and their partners. However this view only considered the relationships between firms, disregarding the larger industrial contexts in which firms operate.

As proposed in the previous chapter, institutional theory is expected to be a fruitful lens to understand how value co-creation works in inter-industry alliances. According to institutional theory, firms obtain legitimacy and benefits through conforming to their own environment's behavioral rules and norms (Scott, 2007; DiMaggio and Powell, 1983). As a result the institutional context of each (potential) partner in value co-creation influences the partner's vision of the future market that is created through value co-creation (Ozcan and Santos, 2015). Although Sarker et al. (2012) studied value co-creation between partners from different industries, the institutional settings of these partners were not explicitly explored as a potential contextual influence to value co-creation. This study addresses this missing dimension. Accordingly, the research question (RQ2) is: *how do the institutional contexts of firms influence value co-creation in the enterprise systems and financial services industries in the SaaS era?*

To answer this research question, this study will utilize institutional theory to explore the influence the institutional pressures ERP vendors and their financial services partner firms feel with regard to moving into a SaaS environment and engaging in value co-creation. The approach includes multi-firm and inter-industrial empirical exploratory case studies that focus on value co-creation in a B2B context. The financial services sector is chosen because this sector is known for being highly institutionalized and parties can be expected to be more influenced by their environment than less regulated industries (Greenwood and Suddaby, 2006). Within this sector, this study explores the perspective of three industries: the enterprise systems industry, the banking

industry, and the accounting industry. The study offers the exploration of the institutional contexts' influence on firms moving into a SaaS environment and approaching value co-creation, and final propositions are offered.

The key contribution of this study is an improved understanding of value co-creation. The institutional settings of firms were found to influence value co-creation in the context of enterprise systems and financial industries in the SaaS era. A finding reflective of institutional theory was that the institutional pressures of a regulative nature blocked firms from engaging in creating more exclusive alliances (needed for higher integration of services). Instead, the data reveal that many firms adopted an autonomous approach when partnering, engaging in collaboration for value co-creation with many firms, which was not reflected in Sarker et al. (2012)'s framework. Another finding demonstrated that firms in each industry were seen to engage in entrepreneurial actions in areas where institutional pressures were least present. Taken together, institutional theory is therefore a fruitful lens with which to study value co-creation and its application illuminates the need for existing value co-creation frameworks to be broadened to include varying forms of partnerships for value co-creation. For practitioners, this lends further insight into how partners for value co-creation may respond or act when entering into the SaaS environment, and provides a broader range of options for ways of value co-creation than may have been previously considered.

In order to proceed, the remaining parts of this chapter are structured as follows. Section 3.2 discusses value co-creation and institutional theory. Section 3.3 gives an overview of the proposed methodology. Sections 3.4, 3.5 and 3.6 presents the results for the cases of the accounting firms, banks and ERP firms, respectively. Section 3.7 provides a discussion, conclusion,

limitations to this study, an evaluation of the research process, and potential future research avenues.

3.2. Theoretical Background

3.2.1. Value Co-creation

As previously mentioned, the literature on value co-creation has shifted from focusing on value created between firms and customers, towards value co-creation in a business-to-business context, or B2B value co-creation (Grover and Kohli, 2012). In the literature focusing on B2B value co-creation, the RBV perspective has been found useful in highlighting the importance of valuable, rare, inimitable, and non-substitutable (VRIN) resources as being the base of competitive advantages through value creation (Barney, 1991; Mahoney and Pandian, 1992). It has been asserted that the manifestation of these resources into competencies are important for *potential* value co-creation activities (Moller et al., 2008). The VRIN resources each firm brings to the partnership are deemed important to value co-creation, and RBV can help explain the value co-creation as resulting from the alignment of the resources two partner firms bring to the table (Das and Teng, 2000). However, the degree to which value co-creation occurs is subject to contextual factors that are not considered within the RBV perspective, and as a result, the RBV perspective on its own cannot fully explain value co-creation (Sarker et al., 2012; Grover and Kohli, 2012). Other perspectives are needed to understand the larger phenomenon of value co-creation (Kohli and Grover, 2008; Madhook and Tallman, 1998).

Sarker et al. (2012) studied three enabling contextual factors that influence B2B value co-creation, where one has a focus on technology most notably: 1) alliance governance, 2) politics-enabling conditions and 3) technology-related collective strength power. Alliance governance was

found to positively contribute to value co-creation, whereas power and politics-enabling conditions were found to negatively contribute to value co-creation. The factor of technology-related collective strength was found to enhance value co-creation. Prior to this study, technology-related considerations were lacking in the discourse on value co-creation (Kohli and Grover, 2008).

Sarker et al. (2012) identify three ways that ERP vendors and their partners can engage in value co-creation: exchange, addition and synergistic integration. The first mode of value co-creation is value *exchange,* where a firm offers its ally resources or competencies that the ally needs to effectively serve clients, and vise-versa. This is also referred to as bartering. Little to no value for end customers is actually created on this level of exchange (although resources are allocated more efficiently), and no new rent streams are achieved. The second mode of value co-creation is *addition* where value is created through layering, like the concept of an "add-on," where allies build on contributions of each other to develop new or existing revenue streams for all parties. The third value co-creation mode is *synergistic integration*, where both parties have to work with each other, surrender some of their autonomy, have trust that the other will act in the interest of both, and finally demonstrate an investment in the relationship, more than just looking for monetary gains (Sarker et al., 2012, p. 327). This has been shown to significantly increase value, as compared to the exchange and additive ways.

3.2.2. Software-as-a-Service and Value Co-creation

Enterprise systems companies, particularly ERP software companies, are beginning to adopt a new business model referred to as a SaaS model (Forrester, 2012; Forbes, 2014). Previously, software was licensed as a product that customers purchased and deployed on their own premises, however now with a SaaS model, ERP software companies manage the software on their servers and rent

the software to customers through an online browser instead. This has many benefits for both ERP software companies (e.g. reduction in operational costs, higher quality services) and their customers (e.g. reduced costs on IT implementation, reduction in duplicate manual data administration) (Kaplan, 2005; Forrester, 2012; Forbes, 2014). In the same vein, financial services firms such as banks and accounting firms are also adopting SaaS principles, e.g. online banking portals and online bookkeeping. As a result, with all parties adopting a SaaS model, this could significantly influence the technology-related collective strength enabling component of value co-creation, which Sarker et al. (2012) identified as critical for value co-creation.

With parties adopting SaaS, the options for value co-creation increase, because the "simplicity of the technology," an element of the technology-related collective strength factor found to enable value co-creation (Sarker et al., 2012), becomes even simpler. Once the parties in an alliance have established connectivity between their services, the software service integration remains intact unless altered, allowing for value co-creation to be built upon more easily in the future for end customers. In particular, SaaS is expected to enhance the additive and synergistic integration ways of value co-creation. One example of the additive mode lies in the potential reselling of the ERP software by financial services firms to their end customers made possible through the SaaS business model. Financial services firms have access to the end customer data, which can be enhanced if the accountant or bank plays the role of the ERP service provider (as a reseller of the ERP vendor). If both entities (ERP vendor and financial services provider) are connecting SaaS services, they can move on to merging services more synergistically into a new joint offering, which is encompassed in the *synergistic integration* mode. A SaaS to SaaS connection allows for the possibility that these services be merged more synergistically into a new joint offering altogether. Surrendering some autonomy is necessary for this mode of value co-

creation, and trust that both entities will balance their interests with those of the other entity becomes more marked (Sarker et al., 2012). This entails that there are factors beyond the technology-related considerations that could influence value co-creation in the SaaS era.

As previously mentioned in Chapter Two, there is the possibility for value co-creation at the convergence of these previously distinct industries, and new markets can emerge as a result. Research rooted in institutional theory has shown that partnering with firms of distinct industries comes with many challenges as the industrial environment of firms can influence movements into the new market (Teracino and Seo, 2013). The institutional settings of (potential) partners in value co-creation have not explicitly been explored as a potential influence to value co-creation processes in prior research. In order to explore this blind spot in the current understanding, this study proceeds with institutional theory.

3.2.3. Value Co-creation through the Lens of Institutional Theory

Institutional theory asserts that organizations within an industry adopt similar practices and structures in order to secure position and legitimacy in their industry (Scott, 2007; DiMaggio and Powell, 1983). These practices and structures guide an organization's behavior in various social and commercial settings (Scott, 2007). The institutional theory literature addresses the role of actors in (re-)shaping their environment (Bruton et al., 2010), and focuses on why actors would desire to change the very institution providing them benefits and legitimacy in the first place (Greenwood and Suddaby, 2006; Seo and Creed, 2002; DiMaggio and Powell, 1991; Holm, 1995; Hirsch and Lounsbury, 1997).

The broader debate between structure and agency is often referred to as the *embedded agency paradox* (DiMaggio and Powell, 1991; Friedland and Alford, 1991; Sewell, 1992; Holm,

1995; Seo and Creed, 2002). The paradox is that if actors are embedded in an institution and are subject to processes that structure their actions, and define their interests and identities (Friedland and Alford, 1991; Clemens and Cook, 1999), then how it is possible actors envision new practices, such as produced by value co-creation, and then subsequently get others to adopt them. This paradox has been observed even in more mature institutional fields (see Greenwood and Suddaby, 2006). As a result, increasing attention has been placed on field-level changes where actors purposefully and strategically enact changes to an institution or drive a new one (Bruton et al., 2010, Greenwood and Suddaby, 2006).

Often these studies take the perspective of an individual actor or entrepreneur as the sole driver and director of the changes occurring. In doing so, they tend to neglect the challenges posed by a need for relationships with *numerous dispersed actors* required for change to occur (Wijen and Ansari, 2007). In order to build a new market structure in a way that optimally benefits oneself, one firm alone cannot build this structure. Collaboration with others is required, however the other firms may have divergent interests and may refuse to cooperate in the way that the original firm desires. However even when parties are hesitant, collaboration can still be achieved, which is referred to as the *collective action paradox*. This paradox concerns the challenges associated with generating the collective action necessary to secure the acceptance of institutional change, due to actors' divergent interests (Garud et al., 2007). A shift in focus towards change within an institution or to drive a new one that is dependent on coordination among numerous dispersed actors is still needed (Dorado, 2005). The concept of *mobilization*, where firms engage others in support of their own vision of what the institutional rules, norms and culture could look like in a new market, is one that encapsulates the challenges of coordination among numerous dispersed actors, and especially among potential competitors (Purdy and Grey, 2009). Activities of mobilization have

been denoted in previous studies on the individual level in non-technical emerging fields (Maguire et al., 2004) or from the perspective of one firm (Munir and Phillips, 2005). Mobilization has been used to view the challenges of creating a platform, or an *open systems strategy*, where both rivals and vendors of complimentary products have easy access to the platform creator's proprietary technology (Garud et al., 2002).

This study conceptualizes the formation of alliances for value co-creation in the SaaS era as a form of mobilization. The firms pursuing benefit from the new SaaS market must convince firms of previously discrete industries to partner with them for modes of value co-creation, sometimes over other competitors vying for similar alliances. With B2B value co-creation alliances, there is always the possibility that there will be attempts to "privately benefit at the expense of the others in the alliance" (Agarwal et al., 2009, p. 417). This can hinder the generation of value (Sarker et al., 2012), and adds challenge to the formation of the partnerships that the convergence of industries already brings.

When firms of previously discrete industries do engage in mobilization (see *collective action paradox*), they are still operating and embedded within their discrete industry where their core business lies (see *embedded agency paradox*). Value co-creation is likely a manifestation of the two paradoxes. To begin to understand value co-creation, the institutional contexts firms subscribe and adhere to, or their *institutional preconditions*, must first be understood as these can influence firms engaging in a new market (Ozcan and Santos, 2015). These institutional preconditions influence negotiations with other firms on a joint market architecture (Ozcan and Santos, 2015). Understanding the institutional preconditions of firms engaging in value co-creation is of particular importance in this case as in circumstances of high uncertainty such as in a new market when a technological phenomenon is occurring (Leblebici et al., 1991). In such a dynamic

market as that of the SaaS environment, the pull of a firm's institution tends to be quite potent in influencing entrepreneurial activities (DiMaggio and Powell 1983).

Figure 3.1 offers a visualization of these relationships to be studied. Building upon the framework from Chapter Two (i.e., Figure 2.1), this study conceptualizes the formation of alliances for value co-creation in the SaaS era as a form of mobilization, and the institutional preconditions of firms engaging in value co-creation as institutional logics. This study places an emphasis on the relationship between these two concepts. These two concepts are indirectly linked through relationship B, where the institutional preconditions influence value co-creation, by way of the organizational changes on the firm level. This study will place emphasis on the relationship between institutional preconditions and value co-creation, while continuing to observe the other relationships as the progression of firms into the SaaS arena and towards value co-creation occurs. Next, an initial framework for the institutional preconditions is proposed.

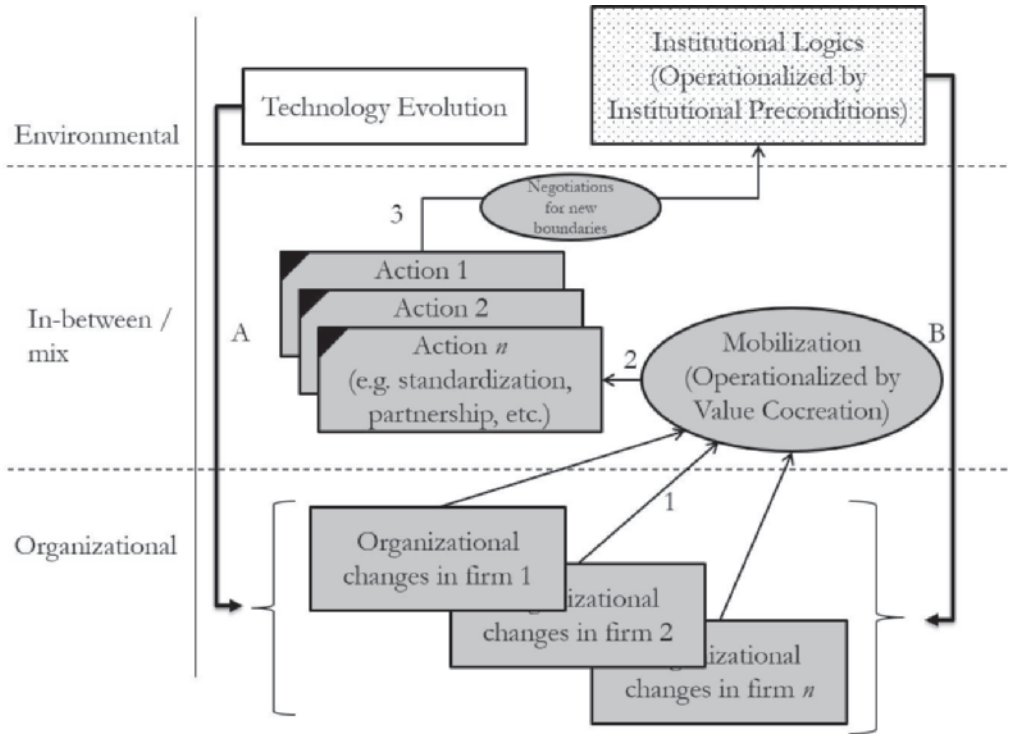

Figure 3.1. Framework for the Inter-relations of the Main Aspects Contributing to, and Resulting from, the Converging of ERP and Financial Services in the SaaS Era via Value Co-creation

3.2.4. Initial Institutional Preconditions Framework

To proceed, we adopt Scott's (2007) three domains of institutionalization – regulative, normative and cognitive. In this study an institution will refer to an industry. The three domains – regulative, normative and cognitive – were proposed by Scott as relating to "legally sanctioned, morally governed and recognizable taken-for-granted behaviors respectively" (Scott et al., 2000, p. 238).[2]

[2] In Chapter Two the regulative domain was explored on the industry perspective, and the normative domain was represented on the inter-firm perspective. Changes on the organizational level are not included in the scope of Chapter Two. It was noted that this needs to be included in future research on the new SaaS market at the convergence of the enterprise systems and financial services industries specifically, as it may indeed influence value co-creation. The cognitive domain is included in this research as a result to address the organizational changes of individual firms.

Based on these three domains, an *initial* framework of institutional preconditions is proposed (see Table 3.1 at the end of this section). The initial preconditions framework allows for the operationalization of the institutional preconditions, and thus provides insight into the institutional logics aspect from the framework of Chapter Two. In Chapter Two, regulation was the primary focus of the institutional logics concept, whereas in this study these will be expanded upon. The preconditions to be explored were determined by the results of Chapter Two, the findings of Sarker et al. (2012) who studied value co-creation in the context of ERP vendors and their ties, related literature, preliminary results of pilot interviews with an accounting professional and ERP vendor executive, and workshops with the ERP vendors (see Appendix B for details). These institutional preconditions, and their enabling, hindering or neutral influence on value co-creation, are explored in the upcoming study (see Figure 3.1). The individual institutional preconditions are elaborated upon one by one in this section.

The regulative domain encompasses regulations, policies, and laws. Essentially this is the domain of not only formal rule creation but also enforcement mechanisms of formal rules. With regard to the regulative domain, two specific institutional preconditions are identified on this domain in Chapter Two (Section 2.4.1.). The first institutional precondition is *professional standards, rules and laws*. The major source of regulatory rules and enforcement mechanisms are national governments (North, 1990; Scott, 2007). Firms adhere to laws and rules to avoid legal and market consequences and further to uphold their legitimacy and benefits within their industry. These professional standards, rules and laws may constrain players in an industry in their behavior towards value co-creation. For example in the financial services industries it is expected the regulative domain would hinder movement into a new SaaS environment as there are laws governing which services can be provided by which parties (Greenwood and Suddaby, 2006). On

the flip side, it is also expected that this domain would be the preferred arena when addressing blockades against more synergistic value co-creation modes, through lobbying for example (Greenwood and Suddaby, 2006; Maguire et al., 2004).

The second precondition identified in Chapter Two, *the implementation of technology standards*, comprises the implementation of technology standards (Teracino and Seo, 2013). Technology standards are technical specifications adhered to by a producer/firm/party, as a result of a formal negotiation/agreement (*de jure*) or as determined by the markets (*de facto*) (Oshri and Weeber, 2006; Besen and Farrell, 1994). This may provide technologically advanced firms a competitive advantage and may lead to preferences for firms in other industries to create partnerships. De jure standard implementations are important to value co-creation in the SaaS era as changes in the way standards are created and adopted, in their interoperability and compatibility levels, can affect competition and collaboration among firms (Vercoulen and Van Wegberg, 1998). Both forms of technology standards, de jure and de facto, are considered in the scope of this study.

The normative domain accounts for behavior that is guided by perception of what is deemed appropriate, common values, and social obligations, e.g., norms, protocols, and value systems (Scott, 2007). Norms that are presented, contested and potentially accepted are established during firms engaging each other with regard to forming ties[3], and thus represents the inter-firm level (Ozcan and Santos, 2015). The collaborative and competitive efforts with potential ties are essential to the new market's development of these norms and protocols (Garud et al., 2002). As per Chapter Two's emphasis on firm collaborations on the inter-firm level, institutional preconditions on this domain are anchored around the *perceptions* of a potential tie. Four

[3] A widely used definition of a tie is a dyadic relationship with strategic significance to those who enter it, which may or may not be based on a written contract (Gulati, 1995; Ozcan and Eisenhardt, 2009).

normative preconditions will be explored for this initial preconditions framework. It should be noted that the perceived importance of the following preconditions is explored, to allow for subjectivity of the firms studied.

The first precondition is *the technology capability of a tie* as the technology-related collective strength between partners pursuing value co-creation directly impacts the success of the alliance's mission for creating value (Sarker et al., 2012). The second precondition is *the importance of utilizing a SaaS delivery channel* as the need for a firm to utilize a SaaS delivery channel may influence value co-creation. The third precondition, *professional relationships between ties,* potentially can influence firms' perceptions of each other while they interact. It is shown that roles such as partner relationship managers are in place to support partners and their interactions with mutual end customers, and the relationships between such roles between firms could influence value co-creation (Sarker et al., 2012). The fourth precondition, *the importance of the positioning of a tie in the market*, is relevant as the positioning reflects the targeted end customer base of the potential partner tie which could be very relevant for value co-creation endeavors. When a firm partners with a new tie and pursues value co-creation, the tie's customer base is a new audience for the firm pursuing the value co-creation alliance, and this new customer base audience can be criteria for choosing value co-creation ties. The importance of the market positioning of a tie is of further relevance as Sarker et al. (2012) highlighted how status differences between partners could potentially hinder value co-creation.

The cognitive domain refers not to individual mental constructs but to widely-shared social knowledge and taken-for-granted knowledge structures (Scott, 2007). In this research this domain takes the firm level perspective. This includes complying with cognitive pressures regarding legitimacy that could, for example, be due to habitual activities. In other words, users of

technology, such as the Internet, may not be consciously aware that they are complying (Grewal and Dharwadkar, 2002). Adoption in this context is often in mimetic fashion, or simply put, because others are doing it. The first precondition, *the perceived importance of SaaS adoption*, directly impacts the collective IT strength between partners as this represents the adoption of a SaaS model itself. It is widely noted that the technology is increasingly an important enabling factor for value co-creation (Grover and Kohli, 2012). SaaS adoption therefore is considered a prerequisite for engaging in value co-creation in the SaaS environment. The second precondition is *pricing and business model change*. This is relevant as with SaaS, it is possible to move to a product-as-a-service pricing model, which is a shift from selling software as a product for one price to renting the software as a service for a (periodic) subscription fee. Alliance partners having varying revenue models could influence value co-creation. For example, a firm may only want to partner with those who also use a subscription model as otherwise it could make collaboration more complicated revenue allocation wise. This is an initial precondition that will be explored as a result on this domain.

Taken together, value co-creation in the SaaS era can be influenced by various institutional preconditions of each of the three institutional domains to varying degrees. Firms carry their institutional preconditions with them into a new market setting, and this can significantly affect the motivation of forming ties (Ozcan and Santos, 2015) needed to pursue value co-creation when moving into the SaaS environment. The upcoming case study aims to explore the role of these various institutional preconditions in relation to value co-creation in order to gain new insights into value co-creation for financial services in the SaaS era. While the institutional preconditions for some of the industries may hinder value co-creation, this study will also reflect on the concept denoted in the embedded agency paradox. Thus, while the preconditions are expected to influence

firms prior to engaging in value co-creation in the SaaS environment (either through enabling or hindering), the entrepreneurial activities of firms in each industry will be observed on each of the domains. It is anticipated that firms' perceptions of the different institutional preconditions will potentially influence how firms pursue value co-creation on the different institutional domains.

Institutional Preconditions	**Definition**
Regulative Domain	
Professional standards, rules, laws	The perceived importance of firms adhering to rules (typically enforced through national governments) to avoid legal and market consequences and further to uphold their legitimacy and benefits within their industry.
Implementation of technology standards	The perceived importance of adhering to technical specifications, either enforced by national governments (de jure) or made essential for advantage through market competition (de facto).
Normative Domain	
The technology (capability) of a tie	The perceived importance of the potential technology-related collective strength with a potential tie.
The importance of utilizing a SaaS delivery channel	The perceived importance for a firm to seek value co-creation through a SaaS delivery channel.
The professional relationships between ties	The perceived importance of the relationships between firm representatives in the alliances meant to support partners and their interactions with mutual end customers.
The importance of the positioning of a tie in the market	The perceived importance of the potential ties' customer base and overall market strategy.
Cognitive Domain	
SaaS adoption	The perceived importance of adopting SaaS.
Pricing and business model change	The perceived importance of moving to a product-as-a-service pricing model.

Table 3.1. Institutional Preconditions for the SaaS-Enhanced Enterprise Systems and Financial Services Market

3.3. Overview of Methodology

3.3.1. Research Method and Setting

This study focuses on exploring institutional preconditions which drive or hinder value co-creation in the SaaS era for firms in the enterprise systems and financial services industries. Exploration through qualitative comparative case studies is most appropriate for developing theoretical insights when extant theory fails to fully explain a phenomenon (Ozcan and Eisenhardt, 2009; Yin, 1994). While Sarker et al. (2012) empirically demonstrate many of the factors that influence B2B value co-creation of enterprise systems companies, institutional elements were not considered, and these are even more important within the context of SaaS adoption. It is uncertain how institutional preconditions influence value co-creation in the SaaS era. Explorative case studies are particularly useful when confronted with observational data whose relevance is uncertain (De Groot, 1969).

The setting for the case study is value co-creation in the SaaS-enhanced enterprise systems and financial services market in a Northern European Country. The Northern European Country has shown a recent increase in adoption of the SaaS model and provides an optimal environment with which to study value co-creation in the SaaS era. Value co-creation in the SaaS era is also readily occurring between the financial services and the enterprise systems industries. The newness and relevance of the emerging SaaS-enhanced enterprise systems and financial services market in the Northern European Country allows this study to observe value co-creation through SaaS from early stages. The Northern European Country also provides an isolated setting in this regard, with the presence of many nationally enforced regulations in place. In addition, financial industries are notably susceptible to institutional pressures (Greenwood and Suddaby 2006) and can be expected

to perceive pressures with regard to value co-creation and SaaS adoption, and it thus provides a suitable setting to study these pressures.

3.3.2. Case Selection

Three different branches of industry participating in the financial services market in the Northern European Country were selected based on theoretical sampling (Eisenhardt and Graebner, 2007; Yin, 1994), i.e., the accounting industry, the banking industry and the enterprise systems industry. The three industries are chosen because there is a potential for value co-creation among collaborating enterprises from these different industries. Based on institutional theory's assumptions, it is expected that institutional pressures vary across these three industries, and thus their role with regard to value co-creation will also vary.

Following a literal replication strategy within each branch of industry, two or three companies were selected within each branch of industry (accounting, banking and enterprise systems) in order to enhance the accuracy, validity and stability of the institutional preconditions for each industry (Yin, 1994). In the accountants industry, three accounting companies were selected; in the enterprise systems industry, two market ERP vendors; and in the banking industry, two banks were selected. See Table 3.2 below.

	Within Industry Cases		
Industry ⇩	**Firm 1**	**Firm 2**	**Firm 3**
Accounting	A1	A2	A3
Banking	B1	B2	n.a.
Enterprise systems	ERP1	ERP2	n.a.

Table 3.2. Overview of Selected Industries and Within-Cases (i.e., Firms)

Accountants

Accounting firms were selected who have ties with the two market leading ERP software firms and are offering SaaS services to their own customers, often through SaaS ERP solutions of which their own customers are also end users of the solutions. Two accounting firms were selected via recommendations from a market leading ERP software firm in the Northern European Country, and will henceforth be referred to as A1 and A2. The third, henceforth A3, was selected through a snowball effect after interviewing at A1. All firms also offer the same four tiers of services: (1) general ledger and the structuring of accounting systems, (2) reporting annually, fiscal reports, annual tax, corporate income tax, and so on, (3) management reports (e.g. quarterly), and (4) "more broad" advice based on these reports. Table 3.3 below gives a brief overview of the information regarding each firm.

Firm	**A1**	**A2**	**A3**
Employees	220	18	5
Structure	6 branches	4 branches	Stand alone; seeking franchisee partners
Customer Base	Approx. 5,000; 10% serviced through SaaS	Approx. 1,000; Approx. 97% serviced through SaaS	Between 100-150; close to 100% through SaaS; 10-15% using their own SaaS solution

Table 3.3. Overview of Accounting Firms

For the accounting firms, there are two major roles: the auditor and the (internal) controller. The controller maintains the company bookkeeping, and the auditor checks the validly of this process against policies and regulations. Sharing data with the auditor is much more sensitive than sharing data with the controller, and the controller's services can be more easily connected to bookkeeping services such as those ERP vendors offer. This study focuses on the services of the controller (as opposed to auditing services) for the accounting industry so that value co-creation can be observed.

Banks

Banks were selected that have ties with the two market leading ERP software firms and are offering SaaS services to their own customers, often through SaaS ERP solutions of which their own customers are also end users. Not only are the banks market leaders, but they currently service a portion of their customers via the ERP firms' solution. The banks selected are called B1 and B2 in this study. Of the four main banks in the Northern European Country with the highest market positions, these two are the only ones who have made a vested effort to deliver services in the SaaS era. Table 3.4 below gives a brief overview of the information regarding each firm.

Firm	**B1**	**B2**
Total Employees	Approx. 22,000 across 15 countries	Approx. 55,000 across 40 countries
Market Share in the Northern European Country	Approx. 20%	Approx. 30%
Structure in the Northern European Country	300 local branches	129 local branches
SaaS offerings for SMEs	Online banking	Online banking

Table 3.4. Overview of Banks

ERP Vendors

Two ERP vendors with market leading positions and similar target markets of Small and Medium-sized Enterprises (SMEs) in a Northern European Country were chosen for this study. With regard to the Northern European Country these ERP vendors hold spots in the top three for market share. These currently have ties with the market leading banks in the Northern European Country (including B1 and B2) as well as with firms in the accounting industry (including A1, A2 and A3). With regard to the mid-market specifically, these ERP vendors consider each other competitors. The ERP vendors are competing specifically for the majority share within the SME target market and this further assures replication similarity. Both are highly active in the SaaS arena and are both

pursuing value co-creation with ties from financial services industries. Table 3.5 below gives a brief overview of the information regarding each firm.

Firm	**ERP1**	**ERP2**
Market share for SMEs	Market leader for SMEs in the Northern European Country International focus – offers products in 17 countries Majority of revenue obtained in the Northern European Country	3rd for SME in the Northern European Country Domestic focus
SaaS solution subscriber firms	Approx. 50,000 in 2010 Approx. 139,000 in 2013	Approx. 26,000 in 2010 Approx. 35,475 in 2013
Main offerings	On premise ERP, SaaS ERP, 2013: wholesale distribution and professional services solutions introduced	On premise ERP, SaaS-like ERP

Table 3.5. Overview of ERP Vendors

3.3.3. Data Collection

Data collected was primarily qualitative in nature and collected from multiple data sources: (1) semi-structured in-person interviews with relevant executives at the focal firms; (2) informal emails, phone calls and observations surrounding interview interactions of the main researcher; and (3) financial reports and business documents. Data sources were used in triangulation, iteratively throughout the collection process and subsequent analyses, in order to increase credibility. Preliminary analyses and results after each of the interviews were used to enhance the following interviews that were based off of semi-structured interview questionnaires, themed via the factors on each institutional domain (see Appendix C).

To address potential informant bias, interview techniques were used (i.e., "event tracking" and "nondirective questioning") that previous research has deemed effective in ensuring accurate

data retrieval (Huber and Power, 1985). Event tracking was used to commence interviews, and interviewees were asked to explain how they approached SaaS adoption, why they became involved with certain value co-creation ties, and how these changed over time. For the nondirective questioning, questions with specific constructs, such as "what if" scenarios, were held to the end of the interview when possible.

A vignette method was used towards the end of the interviews to discuss the potential for large software firms, or firms of unrelated industries, to come into the SaaS-enhanced enterprise systems and financial services market and become direct competitors. It is expected that larger international software companies will enter the ERP market and focus on SMEs in local markets such as in the Northern European Country. The vignette method involves presenting interviewees with a *hypothetical* scenario, but it is a more complete story, or a *vignette* (Braun and Clarke, 2013). This is often used when there is a lack of personal experience to comment on (Barter and Renold, 2000), which is the case for all the interviewees who, of course, have yet to experience potential future disruptions from larger companies from other industries. For example, a larger software company, entering the mid-market is a potential and foreseeable threat due to SaaS adoption by many actors in different industries – however, this has yet to be actually experienced. Competition stemming from an industry previously unconsidered as a threat could also come into play as a result. In order to obtain the perceptions executives have of such a situation, and obtain insights into intended strategies in a larger arena, this method was utilized. And finally, it was important to address potential informant bias since some of the firms interviewed were aware of the others' participation in this study, and divulging intended strategies is a sensitive issue. Thus, confidentiality and anonymity were promised to interviewees to encourage candor (Ozcan and Eisenhardt, 2009).

Key Informant Selection: Accountants

Interviewees were chosen as those who not only are accountants certified in the Northern European Country having delivered traditional accounting services previously to the introduction of SaaS to the market, but those who have also played a significant role in the transition to SaaS and/or also have high level of IT knowledge or background relating to the SaaS service channel. Due to this, interviewees often were also able to give their perspective on how their firm and their peers view the adoption of SaaS and entering the market, e.g. the challenges and opportunities, from a more macro perspective. This allowed for a fuller account of not only their own perceptions of the firm's current position, but a richer account of how the accounting sector would and currently does perceive the market and what would be needed for higher levels of value co-creation in the SaaS era. Table 3.6 gives an overview of the interviewees at the accounting firms.

Firm	**A1**	**A2**	**A3**
Interviewee	A1(1)	A2(1)	A3(1)
Position	Head of Automation	CEO	Director and Head of IT

Table 3.6. Overview of Accounting Firm Interviewees

Key Informant Selection: Banks

Table 3.7 gives an overview of the interviewees at Banks 1 and 2 (B1 and B2, respectively). For B1 there were two interviews: one interview for B1(1), and one interview with both B1(2) and B1(3) present. For B2 there were four interviews: one interview for interviewees B2(1), B2(2), B2(3), and one interview with both B2(4) and B2(5) present. The first interviewee sought out at each bank was someone who was directly responsible for value co-creation activities and alliances involving data exchanges at minimum (often referred to as "couplings"). Through a snowball effect subsequent interviewees who also were highly involved with the strategy as well as the IT decision making revolving around value co-creation activities were identified and interviewed. Interviewees from both business departments and IT departments were interviewed to ensure the

full picture of value co-creation in the SaaS era was observed. With the capability of interviewees to answer questions high, both relevant and ample hard and soft data was collected. These were triangulated with financial documents and business materials used in the interview.

B1					
Interviewee	B1(1)	B1(2)	B1(3)		
Position	Product manager for the ERP coupling	IT architect	Head IT architect		
B2					
Interviewee	B2(1)	B2(2)	B2(3)	B2(4)	B2(5)
Position	Product manager for the ERP coupling	Innovation Manger	IT architect	Business architect	Head Business architect

Table 3.7. Overview of Bank Interviewees

Key Informant Selection: ERP Vendors

Table 3.8 gives an overview of the interviewees at ERP vendors 1 and 2 (ERP1 and ERP2, respectively). For ERP1 there was one interview where two interviewees were present: ERP1(1) and ERP1(2). One leads the business strategy side of value co-creation via SaaS, and the other the IT side. For ERP2 there was one interviewee present: ERP2(1). However, ERP2(1) is the Director of Architecture and Innovation and was the key informant for both the technical and business strategy surrounding all SaaS related ties and alliances. With the capability of interviewees to answer questions high, both relevant and ample hard and soft data was collected. All interviewees were interviewed multiple times over the time period from 2011 until 2015. For the ERP vendors, an additional source of data utilized was: (1) workshops at the focal firms where multiple relevant executives from both the IT and business sides of the firms were present (including the main interviewees), and (2) survey questionnaires. Workshops with both ERP vendors occurred multiple

times from 2011 through 2015. This allowed for many opportunities for follow up discussions and assuring data quality.

ERP1		
Interviewee	ERP1(1)	ERP1(2)
Position	Technology Director Cloud Solutions	Development Manager for Business Unit Cloud Solutions
ERP2		
Interviewee	ERP2(1)	
Position	Director Architecture and Innovation	

Table 3.8. Overview of ERP Vendor Interviewees

Table 3.9 below gives an overview of all of the firms and interviewees at each firm. Appendix B gives a more detailed overview of all interview dates and interview conditions.

Accounting Firm	**Interviewees**
A1	A1(1)
A2	A2(1)
A3	A3(1)
Bank	**Interviewees**
B1	B1(1), B1(2), B1(3)
B2	B2(1), B2(2), B2(3), B2(4), B2(5)
ERP Vendor	**Interviewees**
ERP1	ERP1(1), ERP1(2)
ERP2	ERP2(1)

Table 3.9. Overview of All Firms and Interviewees

3.3.4. Data Analysis and Interpretation

Empirically capturing the institutional preconditions that influence value co-creation is challenging and requires studying the context of the convergence phenomenon as well as directly interacting with firms involved (Carlile, 2002; 2004). An interpretive approach is taken, and like all qualitative research, interpretive studies seek to reveal complexities, nuances, and details that are not possible in quantitative studies. The approach for data analysis followed iteration cycles

between general theory and the empirical data (Ketokivi and Choi, 2014). First interviews were coded via the initial institutional precondition framework. These results were coded with MAX-QDA software. As new insights emerged, follow up analysis rounds were conducted, for the ERP vendors in particular. These iterative rounds were done by both the main researcher and a second researcher, in efforts for cross validation among researchers. Several rounds of interpretation and analysis occurred as a result. Factors and patterns that arose outside of the thematic coding were noted by the main researcher and discussed with two senior researchers. As a result of these discussions, a high degree of consensus could be achieved. This also allowed for the possibility of unaccounted preconditions in each industry to be discovered. Finally, the nature of this analysis approach also permitted within-method and between-methods triangulation, where the data obtained from interviews could be compared with the data available from financial and business documents and observations.

Comparisons between the firms *within* their own industry were first completed, where it was expected that the preconditions would be perceived similarly by the firms selected. First the patterns established during the coding iterations for each of the firms within the same industry were analyzed on each of the domains. Each firm's perceptions of their preconditions were then compared to the other firm(s) in the same industry, in order to achieve accuracy, validation and transferability of the preconditions (Yin, 1994). After the "within-industry" analysis, the results were compared inter-industry to establish if the value co-creation activities these firms were pursuing with the other industries were different or similar. It was expected that the different industries experience different institutional preconditions, thus influencing their value co-creation efforts accordingly. Taking a multi-industrial perspective allows for this study to view different

variations of institutional preconditions, illuminating a larger picture on how preconditions influence value co-creation in different ways.

3.4. Regulative Domain Results

As previously noted, the regulative domain encompasses regulations, policies, and laws. This domain is one of not only formal rule creation but also enforcement mechanisms of formal rules. The major source of regulatory rules and enforcement mechanisms are national governments (North, 1990; Scott, 2007). Two regulative preconditions are explored: the perceived importance of 1) adhering to the professional standards, rules and laws; and 2) the implementation of technology standards. These are discussed below for each separate industry case, followed by an inter-industry analysis.

3.4.1. Accounting Industry

Adhering to the professional standards, rules and laws

First, accounting firms must follow general laws and policies regarding their provision of services as dictated by the Northern European Country's government on this domain. Failing to follow these rules can result in legal fees all the way to loss of privileges to practice, and all three interviewees denoted the importance of avoiding such a scenario. It was noted that accountants are "traditional," by A1(1), and "boring," by A1(3), in that they follow these rules and regulations religiously. A1 has more than five listed affiliations on their website to demonstrate their compliance with the specifications in the accounting industry. In the Northern European Country, there are rules and laws that regulate which entities can deliver financial advice and which can provide banking services, and the accounting firms specifically were limited in moving towards value co-creation into the banking service sphere as a result. There were no rules and laws that

hold accounting firms back from moving further with value co-creation with ERP vendors, however.

The implementation of technology standards

Second, all firms noted that the adoption of new standards regarding reporting was important to them. In the Northern European Country, there have been governmental efforts to standardize the formatting and creation of financial reporting processes and ERP vendors have begun to implement these. The Northern European Country government established a protocol that firms could use to enact connections for financial reporting data exchanges in a more standardized fashion. While this push from the Northern European Country government is limited to reporting protocols, it nonetheless constitutes an example of de jure implementation of standardization. This precondition addresses the perceived importance accounting firms place on ties adopting these standards. A2(1) noted that regardless of the standardization of reporting practices by ERP vendors or other ties, the higher level advice accountants provide will still require traditional human-based accounting work. This is an indication of the perception that the core accounting business lies on a "higher educated level" that only accountants are capable of delivering, as stated by A1(1), despite the implementation of reporting standards. Without accounting firms feeling their core business of higher level advice is threatened in any way, accounting firms will prefer to create alliances with ERP vendors and other ties supporting the technology reporting standards. This facilitates the ease of having many ties of the additive mode.

3.4.2. Banking Industry

Adhering to the professional standards, rules and laws

First, straying from the long standing professional standards, rules and laws in this industry was noted as extremely counterproductive by both banks. B2(1) noted a recent increase in this pressure in stating that "from a regularity point of view, we are going back to rule based." The concern to operationally and internally audit all processes to ensure adherence to banking industry regulations is clear. Thus the basic enhancement of services through data exchanges is considered less risky than more synergistic modes where data would be shared and regulations could be potentially infringed upon. For example, there is the scenario where the ERP vendor's end customer approves the bank service for payment and the journal entries are updated as per the customer's online banking service. In this example the end customer's data privacy is maintained, but the customer is still experiencing enhanced service. The liability and responsibility in this example is lower than it would be if banks moved towards merging services more synergistically into a new joint offering such as improved management of financial assets. The professional standards, rules and norms in this industry therefore hinder this more synergistic mode of value co-creation. The banks stick to the additive modes of value co-creation as a result.

The implementation of technology standards

Second, as previously mentioned, there have been governmental efforts to standardize the formatting and creation of reporting processes in the Northern European Country. The banks prefer to create ties with ERP vendors supporting the adoption of these new reporting standards. This further facilitates additive modes of value co-creation with many ERP vendors.

3.4.3. Enterprise Systems Industry

Adhering to the professional standards, rules and laws

First, the perceived importance of adhering to the professional standards, rules and laws of the enterprise systems industry, was found to influence value co-creation modes, where ERP vendors used local rules and laws to attract other Northern European Country ties for value co-creation. ERP2 emphasized that this precondition with regard to value co-creation in the SaaS era was used to differentiate their solution from other ERP vendors, within their home country. ERP2 noted that the knowledge of local payroll and tax in the Northern European Country is a competitive differentiator, specifically from potential competitors from international industries that could enter the local Northern European Country SaaS ERP arena. ERP2(1) explains that these local rules are "so localized and so changing that it's more the functionality than the technical part you need to know," and attempting to mimic this understanding of the regulatory system in the Northern European Country and implement this into another solution would be "a lot of work" for global competitors. Both ERP vendors noted that maintaining a grasp on the local Northern European Country standards, rules and norms can allow them to remain more attractive to the Northern European Country-based ties from other industries, than new international competitors. This promotes value co-creation overall between the Northern European Country-based ERP vendors and Northern European Country-based ties such as those in the financial services sector, as reducing the disparity in the understanding of the Northern European Country's professional standards, rules and laws between ties reduces concerns over potential regulative conflicts.

With regard to de jure standards within the Northern European Country, as enforced by the government, there have been efforts to standardize the formatting and creation of financial reports. ERP vendors have already begun to implement these new reporting standards. In this way ERP

vendors are simplifying data exchanges for potential partners. Simplification of data exchanges facilitates the additive value co-creation mode of value co-creation, and also fosters the ability to form many additive mode ties simultaneously.

The implementation of technology standards

Second, the implementation of technology standards for the ERP vendors was, for the ERP vendors, important for value co-creation via *de facto* standards (i.e., platform technologies). Without regulative de jure standards already in place via a regulatory entity, the ERP vendors were free to pursue standardizing their own technological standards of their solutions. For ERP vendors, this additional de facto element of the implementation of standards applied, particularly with regard to the technological standards the ERP vendors enforce when partner ties want to develop value on top of their ERP software product. Without regulative pressures as to which industries they could or could not work with, remaining open and non-exclusive while standardizing the protocols and processes by which firms of all industries could add value to the solution was realized as an opportunity.

Prior to SaaS, ERP vendor's value co-creation ties used the ERP vendor's Software Development Kit (SDK) pack. With the SDK pack partner ties would purchase a set of software development tools that allowed the partners to add their service to the ERP vendor's offering (i.e., a third party app). Initially with SDK, ties would have to purchase and implement a package where the rules and standards needed to be studied and learned before development could begin. With an open SaaS-platform, much of this backend process burden is taken away from the potential ties and development is made much easier, according to ERP1(1). The ERP vendor becomes another sales channel for the partner ties. Easing the ties' ability to add value to the SaaS solution is noted as highly important to the ERP vendors. ERP1(1) emphasized that the solutions can become more

standardized with SaaS and this can cause the solution to become less customizable. ERP1(1) explained that ties are "enriching our solution. So the need of custom solution is not so big anymore, because a lot of it is available via [third party] apps." In creating a platform, leveraging off of de facto standards and remaining optimally flexible for ties to create these apps and value offerings is of high importance for value co-creation in the SaaS era. This strategy relies on third party ties to add their value so that end customers of the ERP solutions can experience the customizations they experienced pre-SaaS. The nature of this strategy influenced ERP1 to pursue value co-creation of the additive mode with many ties in the financial services market as opposed to pursuing further value co-creation with fewer unique ties.

Alternatively, ERP2 was less influenced by this precondition and focused less on achieving customizations for the SaaS solution through partner ties. Instead ERP2 focused more on creating customizations technologically within the solution for end customers (without as notable a dependence on ties to do so). Thus for ERP1, there was more perceived pressure with regard to de facto standards than for ERP2.

3.4.4. Inter-Industry Analysis

In summation, the regulative domain demonstrated an influence with regard to value co-creation in the SaaS era in all three industries explored. Overall it was observed that the preconditions on the regulative domain hindered more unique ties and firms instead pursued many ties via the additive modes of value co-creation.

The pressures from the regulative domain's laws hindered the pursuit of more integrated services between the accounting firms and the banks where laws prevent each from providing the other's services. The additive mode of data connections were as far as these parties would leap,

also because of the implementation of de jure reporting standards. Accounting firms were free to move forward with ERP vendors if desired. For the banks, however, pressure on this domain was found to promote them to remain independent of the ERP vendors specifically. Protecting customer data is the core business of the banks and sharing access to this data to pursue more integrated value co-creation raised security concerns for the banks. As a result, the banks pursued the additive mode of value co-creation by enhancing services through data exchanges with many ERP vendors.

In contrast, the ERP vendors perceived less pressure via this domain of a hindering nature than accounting firms and banks noted, however they also similarly pursued additive modes of value co-creation. For example, the ERP vendors do not face the same limiting professional standards, rules and laws the accounting firms and banks noted in terms of what services they can and cannot provide, though in pursuing value co-creation with firms that are regulated, this is a deterrent from creating more unique ties. The ERP vendors are not experts in the banking and accounting industry rules and regulations and moving into these markets is risky without such knowledge. Instead the ERP vendors saw the potential to attract specific national ties by obtaining certain national knowledge labor laws applicable to all industries. For one of the ERP vendors another strategy was seen in the influence of de facto standards where attracting many (as opposed to few) ties to add content and value to their solution through the additive mode was pursued by way of third party apps in an app store.

3.5. Normative Domain Results

As previously mentioned the normative domain accounts for behavior that is guided by perception of what is deemed appropriate, common values, and social obligations. Norms, protocols, and

value systems are some examples. Preconditions included on this domain as per Section 3.2, the perceived importance of 1) technology of a potential tie; 2) SaaS as a delivery channel; and 3) the professional relationships of a potential tie; and 4) the positioning of a potential tie in the market.

3.5.1. Accounting Industry

Technology of a potential tie

First, the perceived importance of the technology of a potential tie was found relevant for value co-creation in the SaaS era. The more technologically capable a tie was deemed by the accountants, the more desirable a partner became for value co-creation. Since technology is not the core competency of traditional accounting firms, partnering with a tie that can bring added technological capabilities and added-value through technology to existing services is sought after. The technology of ERP1 with regard to the SaaS technology was noted as very important by the accounting firms. A1(1) remarked that ERP1 "will keep adding functionality and innovating," and A2(1) noted ERP1 will "stay on the cutting edge of technology." A2(1) also noted that there are many potential functionalities that could add value to the services ERP1 provides such as benchmarking as just one example: "if you have so many administrations in your database, you can benchmark very good, [what] the difference between companies are. [This] can be really interesting, so if you have like 1000 shops of the same square feet and one uses 10,000 euro in gas and the other 2,000, the one with the 10,000 euro gas, it's nice to tell them, you know you use a lot of gas compared to other shops." A1(1) described this as a "cockpit where you can see for all databases." A2(1) also pointed out that the software could help monitor accounts and/or internal operations: "I want the signals from the software, that my client is not delivering his documents on time or that things are not going well or that I have a problem with my planning." With the

exception of A2(1) who preferred a more unique relationship with ERP1, A1(1) and A3(1) remained non-exclusive with ERP vendors, but also took technology of ERP vendors as important criteria before tie creation. ERP vendors considered on the cutting edge of the SaaS technology attracted accounting firms in pursuit of value co-creation in the additive mode of data connections in particular.

SaaS as a delivery channel

Second, SaaS as a delivery channel was found important with regard to value co-creation in the SaaS era. This precondition mainly promoted value co-creation of the additive mode with ERP vendors. A1(1) and A3(1) both felt pursuing many additive ties with ERP vendors as opposed to a specific few was important, with A(1) summarizing this sentiment by stating "it doesn't affect our relation with our customers, which software they choose." A1(1) also noted that "accountants need to be independent of SaaS and its partners." This sentiment of independence with regard to the ERP vendors was noted by all firms. However for A2(1), by utilizing SaaS as a major delivery channel, particularly through ERP1, their management structure in the back office can be maintained by only having to become efficient with ERP1's software as opposed to having to hire more people to become proficient with other ERPs. Their tie with ERP1 is so important to this strategy that they advertise to their customers to use ERP1 over others. A2 services approximately 95% of their clients through ERP1. The emphasis on SaaS as their main delivery channel through ERP1 is clear. By pursuing a unique tie with ERP1 with regard to delivery, A2(1) can master an understanding of ERP1's technological capabilities and assist in optimizing the value co-creation potential between the two ties. A3(1) found this precondition less important with regard to ERP vendor tie formation, but important for their own value creation purposes. A3 went ahead and created their own SaaS offering to offer their smaller end customers who couldn't afford ERP1's

SaaS offering for example. A3 therefore created the value that the ERP vendors could have offered, by itself.

The professional relationships of a potential tie

Third, the professional relationships of a potential tie was found to be of lesser relevance for the accounting firms with regard to value co-creation in the SaaS environment. If a customer had a preferred ERP vendor or bank, the accounting firms would pursue the connection of services with the ERP vendor or bank, irrespective of the accounting firm's professional relationship with these parties.

The positioning of a potential tie in the market

Fourth and finally, the positioning of a tie was also found important for accounting firms, and influenced value co-creation pursuits. The possibility for an accounting firm to leverage off of the ERP vendor's network of SaaS services was deemed an attractive quality when choosing ties. A1(1) notes that this is something "relatively new, the connection between [ERP1] and other services, for example a company in [the Northern European Country] that has the billing for gas for leased cars, and they can connect to the [ERP1] database and export their invoices directly into the financial system of [ERP1]. So there are many connections between [ERP1] and other providers and other SaaS solutions." In this way accounting firms see a potential for value co-creation with the ERP vendors' network of ties as well as with the ERP vendors themselves, and this leads to value co-creation modes where multiple ties enhance each other's' services simultaneously, as one example.

3.5.2. Banking Industry

The technology of a potential tie, SaaS as a delivery channel, and the professional relationships of a potential tie

The preconditions of 1) the technology of a potential tie, 2) SaaS as a delivery channel and 3) the professional relationships between ties were not specifically notable in their influence on value co-creation. This is due to the prioritization by the banks to use the positioning of a potential tie in the market precondition as the ultimate criteria when choosing ties. In particular, the potential tie's customer base played the largest role when banks were evaluating ties and overruled the abovementioned three preconditions as the main criteria. The positioning of a potential tie in the market precondition will be focused on as a result in remainder of this section.

The positioning of a potential tie in the market

The fourth precondition, the positioning of a potential tie in the market, was found to highly influence value co-creation in the SaaS era. While choosing an ERP vendor tie, banks were faced with the opportunity to create ties with the other ties of the ERP vendor to further enhance their services by leveraging off of the ERP vendor's network. For example, if accounting firms also have ties to the same ERP vendor that a bank has ties to, it is possible that the bank could offer more services than simply online banking that may coincide with accounting firm service offerings in the SaaS era. At present, the banks have yet to purposely enter the accounting arena. When faced with the question of potential competition from accounting firms as one example of a missed opportunity for synergistic modes of value co-creation, B2(4) reflects the sentiment shared by both banks, in stating, "I think we would look at it from a different point of view: how could the united banks provide these kinds of services instead of how can we beat our competition (between banks) and get a unique offering." Essentially the banks prefer to unite and utilize their collective strength

via the regulative domain to face such a challenge, and pursue value co-creation among each other, as opposed to interacting potentially in competition on the normative domain. This preference for acting on the regulatve domain hindered the pursuit of more unique inter-industry ties and thus hindered more synergistic value co-creation modes.

B2(1) did note the possibility of another scenario in which an accounting firm and bank could link up exclusively: "it could also be possible that accounting firms directly couple to B2. That's a possibility as well." Despite such awareness, the possibility to leverage off of the ERP vendor's network of SaaS services was not deemed a relevant quality when choosing to create ties. B1(1) noted: "we're not looking for 11 big names on our website, we're looking for a complete proposition for the entire [segment] of clients that we have, and if one of them decided to join the partnership with [large accounting firm] or something, I don't think that matters to us. What does matter to us is if [another Northern European Country bank] or B2 connects a new ERP system, well, we would ask ourselves if we would like to connect that as well." B1(1) states the overall sentiment of both banks: "I think we just have to face the fact that we are just one of a lot of processes clients work with every day. In that aspect, a banking module in an ERP system would be great for our client, but I don't think banks are going to be willing to give that away." Accordingly, despite acknowledging that the ERP vendors could accumulate many services from many industries within their network, where they are the center of the SaaS universe and the bank service is just one of many added value offerings the ERP vendor commands, there is a reluctance to integrate services for synergistic value co-creation with any one ERP vendor. If the banks were to allow for their service to be fully integrated into the ERP vendor's solutions, then there is the chance that the banks would be giving their core business away to the ERP vendors and the banks could become obsolete in the future.

Instead, both banks view the ERP vendors for their customer base mainly when choosing to link to them. B1 currently is linked to 11 ERP vendors, and B2 is linked to 12. The main criteria for creating ties with an ERP vendor begins with the customer base. This is supported by the banking industry's stress on servicing a quantity of customers for the lowest operational costs and this is clear in the choices of which ERP vendors the banks sought out for basic data exchanges. B2(1) explains that "it's important first that they have a pretty good client base, and our figures are for every ten customers every bookkeeping company has, four of them are a customer of B2." When asked if an ERP servicing a smaller customer segment of 100% of B2's customers would be considered, "it still depends on the customer base, if it were to be of specific interest to B2 [notes some Northern European Country sporting clubs as an example] then maybe. It's a case by case basis, but ultimately the customer group matters most, next to the customer size." Essentially, both banks prefer to remain autonomous with regard to working with ERPs, which limits the levels of value co-creation through SaaS both banks would pursue with just one tie.

Additionally, a new precondition emerged: data security assurance with regard to the choosing of ties was found to hinder value co-creation in the SaaS era. This precondition refers to the extent to which ties are considered able to maintain the security of the end customer data. Concerns focused around the security of customer data that the banks hold. The ability to keep control over data security, particularly when connecting services SaaS to SaaS, was noted as a concern. B1(2) points out that "the identities and keys of customers would have to be kept internally, and that in the cloud it would have to be impossible for other parties to do anything with [this data]." B2 interviewees felt similarly and it was noted that there is not only a high importance placed on data security in the industry, but also stressed that it will be a challenge in pursuing more

integrated modes of value co-creation. While at the moment the connections with ERP vendors do not afford a security concern, this will hinder value co-creation as it evolves in the future.

3.5.3. Enterprise Systems Industry

The technology of a potential tie

First, ERP1 demonstrated a preference that potential partners have already adopted and utilize SaaS, as this facilitates additive value co-creation modes through data exchanges. This also denotes ERP1's focus on building an eco-system. The technology of potential ties was particularly an influential precondition with regard to partners such as third parties building apps, where ERP1(1) notes "we prefer that they also have a [SaaS] solution, we prefer that they also use some kind of technique to log in to allow users to log in to [ERP1's SaaS solution] from their solution."

SaaS as a delivery channel and the professional relationships between ties

The preconditions of the perceived importance of 2) SaaS as a delivery channel and 3) the professional relationships between ties were found to be less of notable importance for influencing value co-creation. The ERP vendors play the role of the service providers for the SaaS environment, and seeking many ties to connect and add value to their own SaaS environment was more of a concern. Further, seeking many additive ties diminished the importance of the professional relationships between the ERP vendor and specific ties, as the ERP vendors were pursuing a larger number of ties as opposed to a few unique ties. Therefore, these were found to be of lesser importance for value co-creation and are not elaborated on further.

The positioning of a potential tie in the market

Fourth and finally, both ERP vendors indicated that choosing a partner for value co-creation with a desirable position in their market is very relevant, because it illuminates to an extent the resources

and value-adding ability of the potential partner. The ERP vendors took the positioning and market share of a partner into account before pursuing enhancing services through data connections. ERP1's focus, as stated by ERP1(2), was on the "bigger banks, banks are also strategic partners, we have shipping companies now, address data, Chamber of Commerce service," as ERP1 began to branch out into other markets. These were sought out specifically for value co-creation, in order for ERP1 to become more competitive in the ERP market through diversification. ERP1(1) stated "therefore we not only offered to our customers a solution with accounting, wholesale and distribution for example, but with much more options around it that give them much more value. So, we are adding the value." Furthermore, in ERP1's pursuit of the lost accounting market, it is noted by ERP1(2) "we immediately created [a community of between 700-800 accountants] with accountants and therefore all their clients," because "the accountant is the biggest ambassador for us to get new customers, because he advises the entrepreneurs." ERP1 targeted and recruited accountants specifically, and once accountants moved towards ERP1's SaaS solution, this allowed customers in new market regions to find and join ERP1. The pursuit of diversification of the SaaS solution by way of pursuing value co-creation ties via an open approach is clear. An open approach could be seen as an alternative as there was a hindrance on this domain to pursue more unique ties and build upon those instead.

For the ERP vendors, pursuing unique ties and higher levels of integration proved difficult as ERP vendors are not able to access the financial services data and therefore more synergic integration ways of value co-creation involving mutual data access become impossible. This precondition influenced the ERP vendors with regard to their choosing of ties for value co-creation, and this was noted in their pursuit of the diversification of ties and increases in data exchange connections.

3.5.4. Inter-Industry Analysis

This domain demonstrated an influence with regard to value co-creation in the SaaS era in all industries explored, albeit in varying ways. While the accounting firms were in some instances able to see the value in the ERP vendor's larger network when analyzing the positioning of the tie, as well as potentially consider exclusivity with one ERP vendor that could provide the most state of the art technological functionalities, the banks were unable to do so. For the banks the pressures from this domain were found to hinder the synergistic integration mode of value co-creation and banks viewed ERP vendor ties merely as an access point to a new customer base. This promoted the banks to remain autonomous and pursue many additive value co-creation modes with ERP vendors in the form of data connections, so that they may reach as many customer bases as possible. For the ERP vendors, the perceived importance of the positioning of a potential tie in the market was most relevant. ERP vendors viewed ties almost as access to new markets and industries, as well as a way to diversify the content and added value of their offering. This fostered the ERP vendors to actively seek many ties of the additive mode like data exchange connections. Also relevant for the ERP vendors, the blockades surrounding data privacy and data access prove enough to inhibit unique ties with the banks and accounting firms to develop new joint offerings requiring mutual data access. This hindered value co-creation modes of a synergistic nature, and promoted seeking many ties of the additive mode instead. ERP vendors were inclined to remain open and pursue ties in other industries where such a hindrance does not exist.

3.6. Cognitive Domain Results

As previously mentioned, the cognitive domain in this study takes the firm level perspective, and will refer to widely-shared social knowledge and taken-for-granted knowledge structures

within a firm. This includes complying with cognitive pressures regarding legitimacy that could, for example, be due to habitual activities. This also includes adoption in mimetic fashion, or, because others are doing it. Included on this domain are the perceived importance of 1) SaaS adoption; and 2) product-as-a-service delivery and pricing model.

3.6.1. Accounting Industry

SaaS adoption

First, there is a general assumption by all of the accounting firms studied that SaaS adoption will be necessary in the future despite a marked understanding that accounting firms hold on longer to traditional service methods than firms in other sectors do. On this domain adoption of new technology in mimetic fashion is included. SaaS adoption was deemed inevitable by all accounting firms, but this precondition however caused some delay as the accounting industry is perceived as traditional by the accounting firms. For A1(1), adopting a SaaS solution wasn't a priority "until more customers started to use [SaaS]." A1(1) also notes that "although we are traditional, our clients are going to use this," so there is a sense of where the market is heading despite hesitation to move forward prematurely. For interviewee A2(1) SaaS adoption is noted as necessary for "the total image," and can enable a firm to be "ahead of the crowd" in this sector. Interviewee A3(1) had advocated for A1 to begin to use SaaS to service customers when this interviewee worked at A1 prior to moving to A3. Interviewee A3(1) goes as far as to say that "eventually you have to be in the cloud, or at least you have to tell the clients that you're in the cloud." These statements are despite an emphasis noted by all firms on how accountants are not quick to change as compared to firms in other sectors.

Despite movement towards SaaS, the hesitation stemming from traditional views of the industry remained. Interviewee A3(1) states that "for an accountant it's not very important that you're the most modern company around." Interviewee A1(1) reiterates this, stating that accountants need to be "independent of SaaS and its partners and that this is something every accountant will say." This influences SaaS adoption on this domain, but the customer-centric focus (and with customers demanding SaaS) and the prospect of adding value to customers through technology drive a sense of inevitability. The customer-centric culture also promoted the firms to act independently in some senses, where the customer was more important than what the competition was doing, for example. There is an air of a need to maintain independence and remain autonomous, hindering modes of value co-creation such as more synergistic collaboration between unique ties.

Perceived importance of a product-as-a-service model

Second, with regard to pricing alterations, all accounting firms felt the pressure within the industry that the product-as-a-service model in the future would be preferred by end customers, but the perception of how important this was at the time of the study varied. For accounting firms the product-as-a-service model concept varied from the ERP vendors' version, since ERP vendors traditionally offered products whereas accounting firms traditionally have offered services. For accounting firms a product-as-a-service model is moving from the model of billing all hours of service, to packaging the more basic services into a package and using a subscription model and then billing hours for the higher level services in addition to this package. By moving towards such a hybrid subscription model, accounting firms move a step closer towards the ERP vendors' product pricing schemas. ERP vendors also adopting SaaS and subscription pricing schemas mean they also then move one step closer towards the accounting firms' service pricing schemas as well.

With ERP vendors pushing to include ties as value-adding third parties in their app store, and utilizing subscription based pricing models, this influences accounting firms who want to move towards value co-creation with these ERP vendors to rethink their pricing and also consider subscription-based models. Value co-creation with ERP vendors becomes less complicated if all parties are utilizing subscription models. While interviewee A1(1) noted that the sentiment generally is that "fixed pricing [hybrid subscription model] will become very important," the sentiment that accounting firms do not compete in price wars was still mentioned by all interviewees at all accounting firms. This delays the pricing model changes for A1 for example, where interviewee A1(1) noted that the accounting industry is "not like the supermarket." Interviewee A1(1) also pressed that the value of the accounting industry is on higher level, with more "educated advice," which all interviewees felt could delay adoption of a hybrid subscription model. Despite this A2 has adopted the hybrid subscription model. A3 has not only adopted the hybrid subscription model, but has taken this one step further to create their own low-end SaaS solution for clients who cannot afford ERP solutions from the larger ERP vendors. The hybrid subscription model was in some ways seen to delay movement towards value co-creation through the ERP vendors' app store platforms, however this varied for each accounting firm, with A2 adopting the hybrid subscription model only and A3 also deciding to create value in the ERP vendor market space without forming ties for value co-creation at all. The pressure stemming from this precondition was acknowledged by all accounting firms however they were able to react to these pressures in different ways.

3.6.2. Banking Industry

SaaS adoption

First, SaaS adoption is noted by both banks as important to value co-creation in the SaaS era in the future particularly. B1's interviewees tended to have a hope that the "SaaS era will allow for greater differentiation between banks," as stated by B1(1), as all of B1's interviewees had the feeling that B1 was better apt to use IT to differentiate from B2. B2(2) similarly notes that utilizing SaaS to enhance services by moving to internet banking was necessary for survival. This promotes further value co-creation as SaaS adoption is first step for modes such as enhancing services through data connections.

Perceived importance of a product-as-a-service model

Second, switching pricing models played a role with regard to the value co-creation mode of enhancing services through data exchanges. The banks did not view the product-as-a-service model as conceptualized by the accounting firms in the same way. For the banks, the pricing alternations observed were mainly in the way that the cost and revenue splits within the data connection were approached in arrangements with ERP vendor ties. The banks habitually look to minimize all operational costs, and this applied to the data connection arrangements with partner ties. Attempting to alter pricing arrangements for the data connections with the ERP vendor ties could deter some ERP vendors from forming ties with the banks, thus limiting the banks' ability to fully realize a truely open value co-creation strategy.

Initially both banks allowed for a data connection with ERP vendors as a free service to end customers. The current model between ERP firms and banks is that each partner pays their share, meaning banks pay their costs for the connection and ERP firms pay theirs. Regarding the connection costs, B2(1) noted that it could be possible that B2 begins to charge some of the smaller

ERP firms they may partner with in the future a percentage of the costs to set up the connection. B2(1) elaborated: "every party pays their own costs. But now we have these couplings with larger bookkeeping companies but if a smaller [bookkeeping] company comes to us, well we're thinking we haven't decided yet but we're thinking of charging them for 80% of our costs. Our testing costs because that's the most, well something like 50,000 Euro per coupling just for an interface, and well I think that's fair because if a company shows up with 100 or 500 customers, then our interest is not that big." Both banks felt the pressure to make initial pricing alterations with regard to the ERP vendor data connections, however B2 interestingly feels more pressure to soon charge ERP vendor ties a connection fee, if they do not offer a large enough end customer base or special position in a target market of interest to B2. This would make B2 less desirable as a potential tie for enhancing services through data connections than B1, from the perspective of the less prominent ERP vendors. The pressure stemming from this precondition was acknowledged by both banks however their reactions were nuanced.

3.6.3. Enterprise Systems Industry

SaaS adoption

First, for SaaS adoption, both ERP vendors perceived pressure to adopt SaaS once SaaS emerged in the mid-2000s. Just prior to SaaS, at the turn of the century, a development model had emerged where Application Service Providers (ASP) increasingly began hosting enterprise systems solutions on behalf of customer companies (Hoch, Kerr, Griffith, et al., 2001). ASP reduced maintenance and infrastructure fees, but the ERP vendors still had to host each customized solution separately (and experienced scalability issues as a result). An ASP model was initially utilized to enhance services through data connections. Once SaaS emerged as a more centralized deployment

model that solved the scalability issues, it was quickly noted as being far superior to ASP with regard to this mode of value co-creation and ERP vendors were early to take notice. ERP1 first felt pressure to enhance their services through SaaS adoption. ERP2 felt similar pressure with regard to the data exchanges and connections, but used ASP principles to do so longer than ERP1 did. ERP2 decided to wait. ERP2(1) reflects "the world is going to SaaS, but it is not necessary to go SaaS if customers don't ask for it," and notes in 2006 and 2007 the vendor discussed moving to SaaS again, "but we decided not to make this step because the market was not asking for it." Instead they made use of ASP principles to make their solution "run on a 'SaaS' platform" as put by ERP2(1). However, despite waiting for the demand for SaaS in the market to increase, the perceived pressures from competitors' adopting SaaS eventually pushed ERP2 to move in the same direction as ERP1, towards SaaS adoption. This demonstrates adoption in mimetic fashion, included on this domain, or simply, because others are doing it. Both ERP vendors, from the end customer perspective, offered the enhancement of services through data connections with many ties, however for ERP2 the delay in adopting a full SaaS solution meant more financial strain to upkeep this mode of value co-creation than ERP1 experienced.

Perceived importance of a product-as-a-service model

Second, the perceived importance of a product-as-a-service model and pricing alterations was noted as important for choosing third party ties for additive modes of value co-creation, where both ERP vendors felt strong preference for ties who already utilized a subscription pricing model. This was particularly the case for ERP1 who had strategic plans to roll out a trial-based pricing scheme for end customers who wanted to test out the third party apps prior to purchasing and adding to their solution permanently. This was noted as an added criteria for open platform value-adding tie selection.

Additionally, a new precondition emerged: capital structure. ERP1 is a public company, and ERP2 is a private company. This means that when obtaining funding for SaaS solution developments one vendor faced an additional boundary to cross in order to achieve funding. For ERP1, being a public company meant that in order to pursue SaaS, this had to be explained to shareholders who were not initially pleased by decreasing revenues due to the pricing model shifts. The capital structure was seen to influence decisions surrounding the other two preconditions on this domain, SaaS adoption and pricing alterations. This precondition also was seen to influence decisions with regard to which modes of value co-creation to pursue and strategies with regard to the mode of enhancing services through data connections.

ERP1, a public company, had more shareholders involved in decision making and ERP1(2) summarizes shareholders' opinions about SaaS by noting "on premise [i.e., non-SaaS] is still growing so this is reducing the blow of the model shift… on premise is like a cash cow." This hindered the development of the SaaS solution, functionality wise as well, because as A2 explains "we initially were reluctant in offering all kinds of conversions from the on premise version toward [ERP1's online solution]. We didn't want to cannibalize our market." Much of this concern was due to the pressures noted. ERP1 had more hurdles to pass with regard to seizing value co-creation opportunities generally. As ERP2 is a private company and there are no shareholders involved who demand immediate revenue, ERP2 could move more easily towards the direction of SaaS and pricing alterations, where ERP2(1) explains: "we didn't have to explain because we only made this shift when we had enough money in [cash]." Interestingly, ERP2 delayed moving towards SaaS despite the lack of pressure from this precondition. The delay is also due to a benefit of having higher liquidity. ERP2 has the monetary resources to upkeep a "SaaS-like" solution which provides the benefits of SaaS to the end customers, but internally causes higher operational costs.

This precondition had a very different outcome on each ERP vendor with regard to the ease of pursuing value co-creation.

3.6.4. Inter-Industry Analysis

The cognitive domain demonstrated an influence with regard to value co-creation in the SaaS era in all industries explored, albeit in varying ways. Overall the accounting firms felt traditional pressures to maintain independence of SaaS and remain autonomous, but were still able to successfully engage in value co-creation through the additive mode. Interestingly, in contrast, one of the accounting firms was seen to pursue a more unique tie while another moved into the low-end ERP vendor market space without any ties via synergistic modes of value co-creation. In this industry alone three options for value co-creation strategy were observed: pursuing unique ties with the hopes for synergistic integration; pursuing many ties for additive value co-creation modes; and deciding not to prioritize leveraging from ties, but instead looking inward to develop value through the firm's own technology. Regarding hybrid subscription models, accounting firms moved a step closer towards the ERP vendors' product-as-a-service pricing scheme facilitating value co-creation in the form of an app store. The banking industry felt more urgent mimetic pressure with regard to adopting SaaS than the accountants as the banks emphasized it could lead to differentiation between them. The banks did not see pressure in the same form of the product-as-a-service model that the accountants noted, and did not take a step towards facilitating value co-creation with the ERP vendors in this regard. Instead there was noted pressure to begin to charge some of the smaller ERP vendors to form the data connections for enhancing services, which would potentially decrease the ability of the banks to remain truly non-exclusive with regard to this form of value co-creation. The ERP vendors both felt pressure to adopt SaaS, seeing that not only does

SaaS reduce operation costs but also enhances data connection abilities which was seen as important since they were already value co-creating in this mode prior to SaaS. However, their responses to this pressures varied. ERP1 focused on building an open app store platform to facilitate leveraging ties from many industries, whereas ERP2 did not rush to utilize SaaS for value co-creation, and instead looked inward to develop the technical capabilities of their solution to enhance customizations for their customers without leveraging ties. For the ERP vendors an additional precondition, capital structure, emerged. This precondition was seen to influence both preconditions of SaaS adoption and pricing alterations, as well as decisions regarding app store strategies, relevant for related modes of value co-creation. Table 3.10 shows the revised institutional preconditions framework. Table 3.10 also gives an overview of the perceived importance of each precondition for each industry overall. Table 3.11 gives an overview of all of the results from all industries on each domain.

Institutional Preconditions	Definition	Accounting	Banking	ERP
Regulative Domain				
Professional standards, rules, laws	The perceived importance of firms adhering to rules (typically enforced through national governments) to avoid legal and market consequences and further to uphold their legitimacy and benefits within their industry.	Perceived as very important	Perceived as very important	Perceived as somewhat important
Implementation of technology standards	The perceived importance of adhering to technical specifications, either enforced by national governments (de jure) or made essential for advantage through market competition (de facto).	Perceived as somewhat important	Perceived as very important	Perceived as very important
Normative Domain				
The technology (capability) of a tie	The perceived importance of the potential technology-related collective strength with a potential tie.	Perceived as very important	Perceived as of lesser importance	Perceived as somewhat important
The importance of utilizing a SaaS delivery channel	The perceived importance for a firm to seek value co-creation through a SaaS delivery channel.	Perceived as very important	Perceived as of lesser importance	Perceived as of lesser importance
The professional relationships between ties	The perceived importance of the relationships between firm representatives in the alliances meant to support partners and their interactions with mutual end customers.	Perceived as of lesser importance	Perceived as of lesser importance	Perceived as of lesser importance
The importance of the positioning of a tie in the market	The perceived importance of the potential ties' customer base and overall market strategy.	Perceived as very important	Perceived as very important	Perceived as very important
The importance data security assurance from a potential tie*	The perceived importance of the extent to which ties are considered able to maintain the security of the end customer data.	Not mentioned	Perceived as very important	Perceived as of lesser importance

Cognitive Domain				
SaaS adoption	The perceived importance of adopting SaaS.	Perceived as very important	Perceived as very important	Perceived as very important
Pricing and business model change	The perceived importance of moving to a product-as-a-service pricing model.	Perceived as very important	Perceived as somewhat important	Perceived as very important
Capital Structure*	The perceived importance of the internal financial structure of the firm.	Not mentioned	Not mentioned	Perceived as very important

Table 3.10. Revised Institutional Preconditions Framework and Overview of Results by Industry
**denotes changes from the initial framework in Table 3.1*

	Accounting	**Banking**	**ERP**
Regulative Domain	Pressures perceived on this domain restricted value co-creation modes beyond the additive mode (e.g. the synergistic mode was avoided), particularly with the banks.	Pressures perceived on this domain restricted value co-creation modes beyond the additive mode (e.g. the synergistic mode was avoided). Banks particularly felt inclined to remain independent of the ERP vendors.	Pressures perceived on this domain were less than that of the accounting firms or banks, however the ERP vendors decided to avoid more unique ties with parties who do face such regulative pressures.
Normative Domain	Pressures perceived on this domain allowed accounting firms to see ERP vendors' network as an additional value for potential alliances; e.g. A2 pursues a more exclusive tie with ERP1.	Pressures perceived on this domain were seen to hinder synergistic modes of value co-creation; e.g. banks see ERP vendors merely as access point to a customer population.	Pressures perceived on this domain prompted ERP vendors to seek ties to add value to their SaaS solution, to differentiate their solution. This promoted additive modes such as data exchanges, to differentiate their solution(s).
Cognitive Domain	Pressures perceived on this domain overall prompted accounting firms to remain traditionally separate from other entities and focus on customer needs primarily i.e., autonomous, however due to a culture of customer-centricity, firms acted differently on this domain depending on customer demand. As one stand out example: A3 created a low-end ERP solution due to customer needs.	Pressure perceived on this domain prompted mimetic SaaS adoption. The pressures hindered synergistic modes of value co-creation, and due to a potential strategy to charge fees for new ERP vendor additive data connections, this may also further hinder additions of additive modes of value co-creation in the future.	Pressures perceived on this domain prompted both ERP vendors to pursue SaaS adoption as inevitable. Their value co-creation strategies varied however due to differences in capital structure, e.g. ERP2 was able to delay leveraging value co-creation partners and instead invest in attempting to create value through technological capability development.

Table 3.11. Overview of Results by Institutional Domain

3.7. Discussion, Propositions, and Concluding Remarks

The research question (RQ2) was: *how do the institutional contexts of firms influence value co-creation in the enterprise systems and financial services industries in the SaaS era?* There were three main findings that contribute to answering this question. First, the results show that the institutional contexts in this case promoted additive modes of value co-creation over synergistic modes. The literature states that unique partnerships are needed to establish more integrated modes of value co-creation, because once the parties in an alliance have established connectivity between their services, value co-creation can be built upon more easily in the future (Sarker et al., 2012). In contrast, the results show that value co-creation was achieved by many autonomous partnerships rather than through unique partnerships. Reasons were found on the regulative domain where legally sanctioned behaviors are observed (Scott, 2007), and observed laws prevented the creation of unique ties for the banks and accounting firms. With the regulative laws blocking the synergistic integration mode of value co-creation, the additive value co-creation modes became even more attractive as an alternative.

Second, the results also demonstrated how firms entrepreneurially engaged in value co-creation strategies on the different institutional domains and began to shape the new market. This is opposite to the first main finding, where the perceptions of the preconditions influenced firms to reactively alter their value co-creation approaches. The ERP vendors, particularly ERP1, preferred making many of their strategic decisions on the normative domain to achieve both order and predictability through a broader more open platform strategy. For the banking and accounting industries, it was expected the regulative domain would be where firms would attempt to change blockades against certain value co-creation modes, through lobbying for changing the law, for example (Greenwood and Suddaby, 2006; Maguire et al., 2004). The results confirm this for the

banks who noted that in the face of growing conflict of interest with firms of other industries, they would unite and utilize their collective strength via the regulative domain of their industry. The accounting firms however demonstrated more strategic behaviors on the cognitive domain. While the accounting firms all engaged in many additive data connections just as the banks did, each firm also took nuanced approaches outside of this general strategy. Accounting firms had more intentions to act on the firm level, when addressing customer demands directly for example, which was a major priority for the accounting firms. A difference for the accounting firms from the banks was that they did not sense pressures on the regulative domain that prevented them from engaging the ERP vendors. Meanwhile the accounting firms were specifically targeted by the ERP vendors, who perceived less pressure than both the accounting firms and banks on the regulative domain, and their entrepreneurial initiatives and behaviors were observed mainly on the normative domain. The differences in the pressures perceived helps to explain why each of the different sectors actively engaged in entrepreneurial activities on different domains with regard to value co-creation.

Third and finally, the technology of SaaS allowed for the possibility for the individual firm strategy to achieve nuance on the cognitive domain, particularly for the ERP vendors who are the technology providers. One of the ERP vendors (ERP2) demonstrated far less pressure with regard to adopting SaaS and decided to wait and to not attempt to leverage value through ties as a main strategy. Instead, ERP2 would focus on developing its internal technological capabilities to try to customize the SaaS solutions as opposed to following ERP1's strategy for an open platform app store via the normative domain. This was interesting as this decision to look inward and resist value co-creation altogether was not a considered option via the modes of Sarker et al. (2012). This further emphasizes the relevance of technology for value co-creation, as the technology itself

in the case of SaaS allowed ERP2 to pursue an alternative to build competencies and create value outside of a need for ties. In providing technology as a service, the ability to achieve strategic nuance on the cognitive domain is enhanced.

A further example of the technology of SaaS allowing for the possibility for the individual firm strategy to achieve variation on the cognitive domain was that of A3. While accounting firms are not technology providers typically nor traditionally, A3 was nonetheless able to achieve strategic nuance on the cognitive domain by way of leveraging the SaaS technology, in order to offer a low-end ERP service to its customers (who could not afford ERP1 or ERP2). A3 still sought ties of the additive mode of value co-creation with many ERPs in an autonomous manner, just like the other accounting firms, but was also able to additionally create added-value by leveraging SaaS (albeit in a more basic way than ERP2) without the need for ties.

In light of these three main findings, three propositions for future research can be offered. First, perceptions of regulative preconditions were seen to block the synergistic integration mode of value co-creation, and the additive value co-creation modes became even more attractive as an alternative. This result confirms the existing insight that in the highly institutionalized industries of financial services such as the accounting and banking industries, regulations tend to initially stunt movement towards change (Greenwood and Suddaby, 2006). Therefore,

Proposition 1. In industries with more perceived pressure from the regulative domain, it is less likely that firms engage in synergistic modes of value co-creation.

Second, the results demonstrated how firms entrepreneurially engaged in value co-creation strategies on the different institutional domains and began to shape the new market. The entrepreneurial intension to seek ties and begin to construct the structure of the new SaaS

environment is addressed in the branch of the literature of institutional entrepreneurship (Bruton et al., 2010). How firms leverage the three institutional domains when pursuing entrepreneurial activities to (re-)shape a new environment has yet to be addressed in the literature. This would be a useful path for future research, and therefore,

Proposition 2. Firms' institutional preconditions influence which institutional domain they prefer to act on for value co-creation negotiations.

Third, and finally, the technology of SaaS allowed for the possibility for the individual firm strategy to achieve nuance on the cognitive domain, particularly for the ERP vendors who are the technology providers. The cognitive domain is where firms' beliefs on how to manage uncertainty surrounding value co-creation can influence orientations with regard to choosing ties (Ambos and Schlegelmilch, 2008; Shane, 1993). It was expected by institutional theory that firms would mimetically adopt SaaS and pricing alterations, once there was a pioneer within their industry. This behavior was observed for both the banks and accounting firms when it came to adopting SaaS and new pricing models overall, confirming the expectations by institutional theory for the cognitive domain. However these pressures influenced the ERP vendors (and one of the accounting firms) differently. In sum, in a technological context such as SaaS,

Proposition 3. The more central a role the convergence-driving technology in providing services, the less important leveraging (unique) partners for value co-creation becomes on the cognitive domain.

3.7.1. Institutional Theory Reflection

The various findings indicate institutional theory proved fruitful as a lens to understand value co-creation. The findings also contribute to and corroborate parts of the framework as proposed in

Chapter Two (also shown in Figure 3.1 of this chapter). The institutional logics concept in the framework was expanded upon in this study and delved into through institutional preconditions, which were explored on three domains. Considering the institutional preconditions of the three studied branches of industry illuminated alternative variations to achieving value co-creation. There was specifically more of a focus on the additive mode of value co-creation. This was a new finding the institutional theory lens was able to capture.

The revised and final institutional preconditions framework (see Table 3.10) proved highly relevant as an operationalization of the institutional logics via three institutional domains. This initial framework allowed for the exploration of the relationship of each institutional domain with regard to value co-creation (also see relationship B in Figure 3.1). The firms in each industry perceived pressures on each domain, albeit (and as expected by institutional theory) to varying degrees. Some preconditions were found to be not particularly relevant for value co-creation. Further, two new additional preconditions emerged during the study. For the banks, a new precondition emerged on the normative domain: data security assurance with regard to the choosing of ties. This was found to hinder value co-creation and was added to the institutional preconditions framework as a result. Another new emerging precondition was that of capital structure for the ERP vendors on the cognitive domain, which was found to influence the other two preconditions on this domain and internal firm strategies. These new preconditions were added to allow for the nuances of the different institutions to be accounted for, enhancing the preconditions framework and allowing for the domains to be observed in a tangible way in the context of SaaS. Institutional theory's lens also provided insights into areas where more understanding is needed for future research. The cognitive domain's influence on the firms, as an example, demonstrated that the firms can achieve nuanced strategies in initiating change when the

provision of technology is increasingly present. How firms adapt to SaaS, or any other technological development in a new market, is a crucial question in further understanding value co-creation.

3.7.2. Limitations

Limitations of this research include limiting the scope to the enterprise systems and financial services industries, whereas value co-creation in the SaaS era is occurring in many other industries. Including other industries that are pursuing value co-creation with the industries observed in this study could provide a broader picture so as to understand the larger phenomenon of value co-creation occurring in the SaaS era. Further corroboration of the framework from Chapter Two (Figure 2.1) would also be fruitful in this same vein. Future research could further test and corroborate the relevance of, and inter-relations between, the preconditions for the financial services industries and enterprise systems industry as well as broadening the preconditions framework to increase its applicability for other industries in the SaaS era. This study also was limited to the Northern European Country and thus the observed institutional preconditions for all of the industries should be expected to be specific to the Northern European Country to a degree, particularly those on the regulative domain. Broadening the scope to include other countries would broaden the understanding of institutional preconditions, providing an international aspect that is expected to provide variance. Another limitation is that only two or three firms were included via the literal replication sampling for within each industry. Since differences were seen between the accounting firms as well as between the ERP vendors on the normative and cognitive domains, including a higher sample of firms for each industry would enhance the accuracy, validity and stability of the institutional preconditions observed for each industry (Yin, 1994). Studying

industries engaging in value co-creation where there are less pressures from regulative preconditions would be also be fruitful for future research. Of particular interest for future research would be to explore the differences seen between the ERP vendors with regard to value co-creation strategies, as neither were anticipated by Sarker et al. (2012).

3.7.3. Validation and Evaluation

Regarding the validity and rigorous nature of this research, the credibility, transferability, dependability and confirmability will be reflected upon in an evaluation of the qualitative research process (see Lincoln and Guba, 1985). First, credibility refers to the idea of internal consistency, and confidence in the "truth" of the findings. The only ones who can validate whether the convergence phenomenon observed by the researchers optimally matched the reality as perceived by the participants, are the participants themselves. Therefore in order to enhance the credibility all transcripts were sent to the interviewees post-interview for review. This allowed interviewees to clarify, correct errors, and provide additional information if necessary. Prescribed guidelines for conducting interview research, such as recording interviews, transcription, and triangulating with multiple sources (and forms) of data were all used in this research (Runeson and Höst, 2009). For the ERP vendors, intermittent results were presented at the workshops as well so that the ERP interviewees could comment on whether the research was reflecting their reality. Second, the transferability of the research represents the degree to which the results the research can be "transferred" to other contexts. This is the job of the main researcher and in order to ensure the context and assumptions of the research are described in rich detail. In efforts to allow for the institutional preconditions framework to be tested in other contexts, the details (and limits) of the research context, of SaaS adoption in the Northern European Country, were thoroughly elaborated

upon. Some institutional preconditions were specific to an industry case for example, and this was transparently reported on and explained in detail. Third, the dependability of the research denotes an emphasis on the need to account for the ever-changing context within which research occurs. In order to approach this, transparency in the addition of new preconditions while delving into the context of each industry was ensured for example. As the framework was being "built," reflections on the additions were included, and these were also reflected at the end of the research as a whole. And finally, confirmability is when the results can be confirmed or corroborated by others. One approach taken to achieve a higher level of confirmability was when analyzing the transcripts prior to coding, the main researcher and second researcher both reviewed the documents separately and then compared results, in order to promote cross-validation among researchers. Further, the second researcher also played "devil's advocate" during the analysis sessions. In order to increase the validity of the findings, and the dependability and transferability specifically, future research exploring the framework in other industries experiencing the convergence phenomenon would be fruitful.

3.7.4. Conclusion

This study aimed to explore the influences of institutional preconditions on B2B value co-creation in the context of increasing SaaS adoption in the financial services and enterprise systems industries. The research question (RQ2) was: *how do the institutional contexts of firms in the SaaS era influence value co-creation in the enterprise systems and financial services industries?* Prior literature studying B2B value co-creation between ERP vendors and their partners (notably Sarker et al., 2012) did not take into account the institutional environments of the firms engaging in value co-creation. The institutional environments become even more important in the context of SaaS

adoption, as SaaS enhances the technology aspect of value co-creation and enables inter-industrial value co-creation alliances. Accordingly, this study utilized institutional theory to explore the influence the institutional precondition pressures ERP vendors and their financial services partner firms experience when moving into a SaaS environment and engaging in value co-creation. The approach included multi-firm and inter-industrial empirical exploratory case studies that focused on value co-creation in a B2B context. Three industries were in focus: the enterprise systems industry, the banking industry, and the accounting industry.

Results include observations and confirmation of institutional pressures for each industry, and a confirmation that institutional preconditions indeed influence value co-creation in the context of SaaS. An initial framework for institutional preconditions allowed for the operationalization of the institutional environments (or, the concept of institutional logics from Chapter Two's framework), and these pressures were observed on three institutional domains. Institutional pressures to resist change were present and were seen to limit firms on some domains, however firms still found alternative ways of value co-creation that skirted the institutional precondition blockades. One main insight was that firms' institutional preconditions were seen to influence which domain they preferred to leverage when pursuing value co-creation. The accounting firms preferred to pursue value co-creation on the cognitive domain, changing their in-house perceptions towards the importance of adopting SaaS. The banks stated they would prefer to unite and utilize their collective strength via the regulative domain to face competition from the accounting firms or any threats to their core business. Finally, the ERP vendors took preference for the normative domain, by proactively attempting to change the acceptance of inter-industry ties, specifically targeting the accounting firms as a community as an example. Another main insight was that the pressures perceived by firms on the regulative domain blocked firms from

engaging in creating unique alliances and instead firms demonstrated an open approach when partnering that still allowed for value co-creation. An open platform strategy was also observed for one of the ERP vendors. These are indications for future research whereby a broader perspective is needed to fully understand the full phenomenon of value co-creation. Considering the forms of partnerships as an important aspect when exploring value co-creation would be fruitful. A final insight was that the cognitive domain could best explain the variations of the firm specific strategies regarding value co-creation in the SaaS era. The more central a role the technology plays in providing services, the less important leveraging (unique) partners for value co-creation became on the cognitive domain. A better understanding of how firms adapt to SaaS on this domain is another avenue for future value co-creation research. Accordingly, Chapter Four will explore this empirically.

Chapter Four

A Dynamic Perspective on Dynamic Capabilities: The Case of the Enterprise Systems Industry Before, During and After the Introduction of SaaS*

4.1. Introduction

Companies rely on routines to run their daily business. Good operational routines provide the basis for the manufacturing of products or the delivery of services and ensure that the work is done in an effective, reliable and efficient way. Moreover, according to the Resource-Based View of the firm (RBV), hard-to-imitate firm-specific routines combined with unique and scarce resources can form the foundation of a firm's competitive advantage (Barney, 1991).

From time to time companies need to update or renew routines in order to adapt to new technologies or changing market conditions. A recent example of such a change is the introduction of the SaaS business model in the software industry. SaaS is changing the way software vendors deploy their software products and thus how customers receive and pay for these services. This calls for many changes in the software vendor's products and routines as a result. For firms operating in dynamic markets, adapting to changing market conditions or new technologies, such as SaaS, is a continuous process and integral to sustaining a competitive advantage. In order to

* This chapter was written with the main author's supervisors, dr. K. Peters and prof. dr. ir. J. C. Wortmann.

adapt, companies in dynamic markets have processes in place to learn new routines, which are better known as *dynamic capabilities*.

Although the dynamic capabilities perspective has become a point of emphasis in the strategic and innovation literature (Di Stefano et al., 2014), there is a debate as to what extent dynamic capabilities can explain a *sustained* competitive advantage in dynamic market settings. Teece, Pisano and Shuen (1997) claim that dynamic capabilities can be sufficiently stable, reliable, unique, and detailed to satisfy the VRIN criteria necessary for a competitive advantage, that is, dynamic capabilities that are valuable, rare, inimitable and non-substitutable. This claim has however been contested, most notably by Eisenhardt and Martin (2000). These authors claim that the dynamic capabilities framework reaches a boundary condition in markets with frequent changes, fluid business models, high levels of uncertainty, and shifting players. In such highly dynamic markets, it is impossible for firms to develop stable, unique and detailed dynamic capabilities. In the time needed to develop and stabilize a dynamic capabilities, the market has already moved on and requires again new routines. According to Eisenhardt and Martin (2000), these firms can only rely on simple experimental routines and rules, which cannot meet the VRIN criteria. In less dynamic markets, they agree with Teece et al. (1997) that dynamic capabilities can be the source of a competitive advantage, albeit only temporary because dynamic capabilities usually take the form of *best practices* that can be imitated relatively easily (Eisenhardt and Martin, 2000).

The focus of Teece et al. (1997) is on *complex routines and organizational mechanisms* and the focus in Eisenhardt and Martin (2000) is on *simple routines and managerial mechanisms* (Peteraf et al., 2013; p. 1407). However, according to Peteraf et al. (2013), these are "just differences in perspective […] really understanding dynamic capabilities requires seeing the

complete picture and exploring interlinked dynamic capabilities as a whole" (p. 1407). Accordingly, Di Stefano et al. (2014) propose to bridge these two opposing views by supposing that both views of dynamic capabilities, i.e., stable vs. unstable, detailed vs. simple, etc., are in fact part of a *dynamic bundle* of resources and capabilities. Di Stefano et al. (2014) further Peteraf et al.'s (2013) suggestion that perhaps competitive advantage is "found in neither simple routines nor complex routines in isolation, but rather in both, in the form of a dynamic bundle" (p. 1405). The conceptual postulations to bridge both views have yet to be subjected to empirical investigations, most specifically with regard to this interlinked view, where empirical studies are lacking (Di Stefano et al., 2014). There has been limited progress in the field to build this base of empirical evidence (Lyles and Peteraf, 2009; Schilke, 2014). Therefore, this study aims to explore the interlinked view of the different natures of dynamic capabilities and contribute empirically to the refinement of the dynamic capabilities perspective.

In order to take a more in-depth approach to the dynamic capabilities perspective, a qualitative case study is the chosen method. A comparative case study in two producers of enterprise systems has been conducted. The two enterprise systems firms were studied over a long period of time, in both retrospect and in real time. Both enterprise systems companies have operated in a dynamic market for the past few decades. Additionally, there have been several external events causing larger changes to the market, one of which is the introduction and rise of SaaS. SaaS created many new opportunities for enterprise systems companies, and this landscape lends itself to studying dynamic capabilities.

The chapter is structured as follows. The next section provides a more detailed description of the dynamic capabilities perspective, the debate in literature as it stands now, and the role the debate plays in providing a conceptual background in this study. Section 4.3 gives an overview of

the proposed methodology and delves into the context of the enterprise systems industry cases this study explores. The data collection process and analysis methods are also discussed in this section. Section 4.4 provides each within-case analysis, followed by cross-case insights. Section 4.5 explores these results in a discussion. Section 4.6 concludes with interpretations of how dynamic capabilities intertwine and what this means for the larger dynamic capabilities debate. The conclusion also offers potential avenues for future research. Section 4.6 also considers the dynamic capabilities perspective with regard to value co-creation. Section 4.7 provides a reflection on the validation and evaluation of the research.

4.2. Theoretical Background

4.2.1. Dynamic Capabilities Origins and Definitions

The dynamic capabilities perspective originally stems from the resource-based view (RBV). RBV originally focused on internal organization, i.e., a firm's resource base, which includes "tangible, intangible, and human assets (or resources) as well as capabilities," can be either under the organization's direct control or can be controlled by alliances (Helfat et al., 2007, p. 4). Within the resource base are operational capabilities, which are defined as capabilities enabling an organization to "make a living in the present" (Winter, 2003). It also theorized that if firms have resources that are valuable, rare, inimitable, and non-substitutable (i.e., VRIN attributes), they can achieve not only a competitive advantage but one that is sustainable as resulting value strategies would be difficult to duplicate (Barney, 1991; Nelson, 1991; Peteraf, 1993).

Teece et al. (1997) extended RBV in response to a need for an explanation as to how and why certain firms can achieve a competitive advantage in environments where unpredictable change is a reality (Eisenhardt and Martin, 2000). One shortcoming of RBV was that competitive

(and sustainable) advantages could not be explained in markets of rapid changes. Teece et al. (1997) noted that in order to match the changes in faster paced environments such as those with technological advances, firms' operational capabilities need to be tweaked over time. Dynamic capabilities were noted as those that could alter operational capabilities, thus allowing an organization to "alter how it currently makes its living" (Helfat and Winter, 2011, p. 1244). The original definition of the dynamic capabilities construct was "the firm's ability to integrate, build and reconfigure internal and external competencies to address rapidly changing environments" (Teece et al., 1997, p. 516). Eisenhardt and Martin (2000) expanded upon this through a behavioral perspective by looking at dynamic capabilities as organizational processes, where resources are used to "match and even create market change" (Helfat et al., 2007). Many questions over inconsistencies and the conceptual coherence of the construct of dynamic capabilities itself have arisen (Zahra et al., 2006). Helfat and colleagues took these inconsistences into account and dynamic capabilities are defined as the "capacity for an organization to purposefully create, extend or modify its resource base" (2007, p. 4). This definition is more widely accepted and is the one used in this study.

Teece (2007) further breaks down dynamic capabilities into three categories based on their purpose: sensing, seizing and transforming. Sensing dynamic capabilities involve a "scanning, creation, learning and interpretive activity" related to new opportunities, where firms must "constantly scan, search and explore across technologies and markets" (Teece, 2007, p. 1322). Sensing is also coupled with the idea of "shaping" the environment, as the future "rules of the game" could be altered by the "co-evolution and complex interaction" between potential eco-system partners (Teece, 2007, p. 1323). Seizing is when a firm makes a decision to invest in an opportunity, and it is addressed in the form of "new products, processes or services" (Teece, 2007,

p. 1326). Transforming is the reconfiguring following seizing actions, and it represents the ability to "recombine and reconfigure assets and organizational structures" as a result of changes in the market and technologies (Teece, 2007, p. 1135).

Research on dynamic capabilities has recently received a dramatic increase in attention in the field of strategic management (Di Stefano et al., 2014), in large part because it has been deemed a promising perspective of scholarship (Teece, 2014, Helfat and Winter 2011). However, for one of the most active research areas in the field of strategy, the perspectives and disciplines with respect to the dynamic capabilities perspective that have been utilized vary widely. This is evidenced by recent studies that offer possible suggestions as to how to unite the various components of the dynamic capabilities construct itself.

A recent study by Di Stefano, Peteraf and Verona (2014) demonstrates the varying theoretical perspectives of dynamic capabilities by showing that in the literature thus far, five structural components are approached from different angles, these being: the nature of the construct (what it is fundamentally); the agent (who is exerting it); the action (what it does); the object (on what is the capability acting upon); and the aim (it's purpose). Figure 4.1 shows the connections between the components, the primary movement going from the nature to action to the aim. A bifurcation is found for each and every structural component in the model. Taking the purpose or aim as an example: many scholars view the purpose of dynamic capabilities is to achieve a competitive advantage, while others feel the purpose is to organizationally adapt to change. This demonstrates that scholars do not agree on any component and that there is room for further investigation conceptually. Two camps are identified in particular: Eisenhardt and Martin (2000) vs Teece, Pisano and Shuen (1997), which will be discussed next.

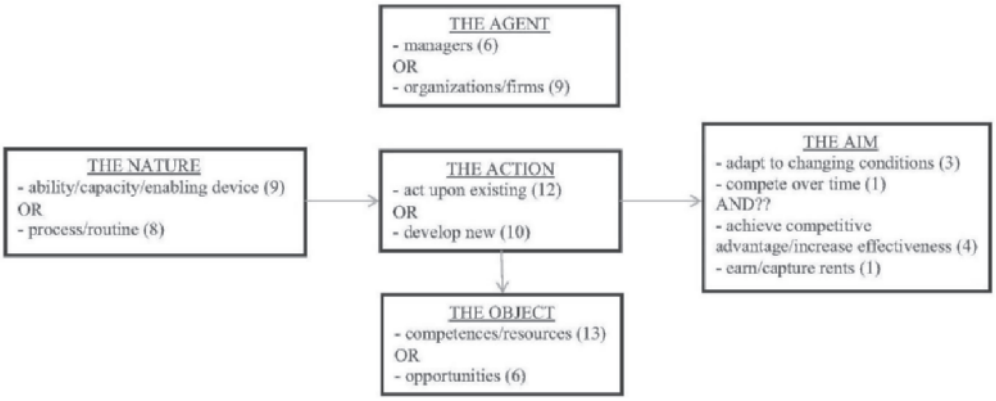

Figure 4.1. Defining Dynamic Capabilities: The Emerging Evidence (Source: Di Stefano, et al., 2014)

4.2.2. A Division in the Literature: Eisenhardt and Martin (2000) vs Teece, Pisano and Shuen (1997)

The differing viewpoints in dynamic capabilities literature are found to be "socially constructed over a divide between two separate knowledge arenas that represent the legacy of two seminal papers" in a study by Peteraf, Di Stefano and Verona (2013, p. 308), namely the papers of Teece, Pisano, and Shuen (1997) and Eisenhardt and Martin (2000). These papers differ, even offering contradictory views, yet they are referred to and used interchangeably in most of the literature (Peteraf et al., 2013). Teece, Pisano and Shuen (1997) claims dynamic capabilities exist in rapidly changing markets where they can allow for a competitive advantage that can also be sustained. Eisenhardt and Martin (2000) states that any competitive advantage achieved by dynamic capabilities would be short lived as their nature would be similar to best practices, which can be substituted. This would only be feasible in markets of (at most) moderate continual change. According to Eisenhardt and Martin (2000), the starkest of conflicts occur in a high-velocity market setting; therefore, the differences are best illuminated in this scenario (Peteraf et al., 2013).

However before delving into these differences, the high-velocity market dynamism will first be explained.

Dynamic Capabilities in High-Velocity Markets

In a high-velocity market there is "rapid and discontinuous change in demand, competitors, technology and/or regulation, such that information is often inaccurate, unavailable or obsolete" (Bourgeois and Eisenhardt, 1988, p. 738). Example of high-velocity industries include "microcomputers, airlines and banking," which stand in contrast to "cyclical industries such as forest products and machine tools" (Bourgeois and Eisenhardt, 1988, p. 816). In a high-velocity setting, it is noted that the durations of competitive advantages are unpredictable and time becomes paramount to strategy. Eisenhardt and Martin (2000) say that the dynamic capabilities driving the advantages themselves are unstable processes (p. 1106). Decisions are centered more on rapidly changing situation-specific information than on existing knowledge.

In a high-velocity market Eisenhardt and Martin (2000) define dynamic capabilities as "simple, experiential, unstable processes" with "unpredictable outcomes" (p. 1106). These are simple rules in a "continuously unstable state," and are, as a result, "difficult to sustain," making them an internal threat to a company (Eisenhardt and Martin, 2000, p. 1116). Dynamic capabilities as defined by Eisenhardt and Martin (2000) are based on new knowledge creation and "allow for emergent adaptation," they are fragile but they still are "iterative and cognitively mindful, not linear and mindless" (Eisenhardt and Martin, 2000, p. 1116). On the flip side Teece, Pisano and Shuen (1997) defines the same construct as complex firm-specific routines that are "complicated, detailed, analytic processes" (Eisenhardt and Martin, 2000, p. 1106). These are a stable and robust set of processes with predictable outcomes, which stands contrary to Eisenhardt and Martin

(2000)'s definition. Table 4.1 gives an overview of Teece, Pisano and Shuen (1997) compared to Eisenhardt and Martin (2000) in a high-velocity market.

	Teece, Pisano and Shuen (1997)	**Eisenhardt and Martin (2000)**
Definition	Routines to learn routines	Specific organizational and strategic processes by which managers alter the resource base
Heterogeneity	Idiosyncratic (i.e., firm specific)	Commonalities (i.e., best practices) with some idiosyncratic details
Pattern	Detailed, analytic routines	Simple, experimental routines
Role of knowledge	Routines rely extensively on existing knowledge	Routines rely on newly created knowledge specific to the situation
Execution	Linear	Iterative
Stable	Yes	No
Outcomes	Predictable	Unpredictable

Table 4.1. Teece, Pisano and Shuen (1997) and Eisenhardt and Martin (2000) Differences in a High-Velocity Market (Adapted from Eisenhardt and Martin, 2000, p.1111)

Teece, Pisano and Shuen (1997) claim dynamic capabilities of a detailed and analytical nature can exist in a high-velocity market and can achieve a competitive advantage, which can be sustained over time. Eisenhardt and Martin (2000) claim that in a high-velocity market setting "dynamic capabilities take on a different character" entirely (Eisenhardt and Martin, 2000, p. 1106), and complex firm-specific routines, such as those Teece, Pisano and Shuen (1997) describe, cannot exist. In contrast, the character of dynamic capabilities in a high-velocity market setting is reminiscent of simple experimental routines and rules that constantly need to be changed to match market dynamism and thus never can become stable. In this case, dynamic capabilities cannot explain a sustainable competitive advantage. This illuminates a major boundary condition dispute in a high-velocity market (Peteraf et al., 2013).

Dynamic Capabilities in Moderate-Velocity Markets

In markets of moderate dynamism, the differences between Eisenhardt and Martin (2000) and Teece, Pisano and Shuen (1997) are less grand. In a moderate-velocity market there is change occurring in the context of a stable industry structure, whereas in a high-velocity market industry lines blur and, for instance, "successful business models are unclear" (Eisenhardt and Martin, 2000, p. 1111). In a moderate-velocity market, Eisenhardt and Martin (2000) agree with Teece, Pisano and Shuen (1997) that dynamic capabilities can exist as Teece, Pisano and Shuen (1997) describe, and allow for a competitive advantage. However, Eisenhardt and Martin (2000) hold the competitive advantage cannot be sustained whereas Teece, Pisano and Shuen (1997) argue it can. Teece, Pisano and Shuen (1997) note that the "durability of [an] advantage" is dependent on how "readily imitated by rival firms" dynamic capabilities are, implying a sustained advantage as a result (Peteraf et al., 2013, p. 1395). Eisenhardt and Martin (2000) note while dynamic capabilities could explain an advantage, these advantages are temporary because dynamic capabilities, in this case, are merely "best practices" adopted across the industry. Examples of best practices include successful product development processes or pre-acquisition routines. While "idiosyncratic in their details" (Eisenhardt and Martin, 2000, p. 1105), best practices are still substitutable and are not rare, violating two VRIN conditions needed for a sustained advantage (Barney, 1991). Therefore, Eisenhardt and Martin (2000) conclude that only in moderate-velocity markets does the RBV explain a sustainable competitive advantage.

4.2.3. Bridging the Division

In past decades, criticism of the dynamic capabilities perspective has mounted, as scholars have often placated either Eisenhardt and Martin (2000) or Teece, Pisano and Shuen (1997) exclusively

(Eriksson, 2013; Zahra et al., 2006). As a result, scholars are increasingly asking whether the contradicting perspectives can be bridged despite the stark divide created by a static perspective of the market velocity, i.e., moderate or high (Peteraf et al., 2013). First, it is possible that there is more intertwined interplay between these two views. Di Stefano, Peteraf and Verona (2014) use the conceptual metaphor of an *organizational drivetrain*, where both Eisenhardt and Martin (2000) and Teece, Pisano and Shuen (1997) dynamic capabilities are linked and work together like the drivetrain of a bicycle. Di Stefano et al. (2014) illustrate a scenario where both types of dynamic capabilities not only co-exist but there is also "a system dynamically connecting them, thus allowing them to operate simultaneously and in a coordinated, complementary manner" (p. 321). This is an elaboration of the *dynamic bundle* whereby "simple routines are used to manage more complex and more stable routines" (Peteraf et al., 2013, p. 1405). A dynamic bundle postulates that Eisenhardt and Martin (2000)'s more simple rules, while unable to withhold their own sustainable advantage themselves, are a necessary part of a larger "grouping of resources and capabilities that contain more stable elements" as found in Teece, Pisano and Shuen (1997)'s view (Peteraf et al., 2013, p. 1405). For instance, detailed and routinized complex processes are still necessary to support and implement the simple rules used to quickly and flexibly respond to high-velocity situations. The organizational drivetrain metaphor takes the dynamic bundle a step forward by conceptualizing the linkages between the two forms of dynamic capabilities that could co-exist, and postulates that mechanisms can be put in place to identify when and where to make adjustments so that adjustments to either or both or the entire system can be optimally achieved.

A second idea in the literature relevant for understanding these dynamic capabilities transitions and interlinking mechanisms, is the concept of a dynamic capabilities influencing themselves. Helfat and Peteraf (2003) demonstrate that there are "many instances where one

dynamic capability can and does alter another dynamic capability" (Helfat et al., 2007, p. 5). A branch of the field that provides a useful conceptualization of this idea is the branch considering hierarchies of dynamic capabilities and their interrelations. Collis (1994) first pointed out the notion of higher-order hierarchies and others followed suit to further this suggestion of hierarchies (Winter, 2003; Danneels, 2002; Zahra et al., 2006). Helfat and colleagues (2007) point out that "while it may be difficult for a particular dynamic capability to modify or extend itself," this possibility should not be ruled out (Helfat et al., 2007, p. 4). This could potentially lend insight into transitions specifically in dynamic capabilities over time.

A third and final idea is proposed for the study in this chapter. While it is clear that moderate and high-velocity act as extremes during dynamic capabilities debates, it also could be expected that many companies operate in a setting that lies somewhere between moderate and high, or in a market that shifts velocity at times. Over time the market velocity itself can be dynamic, meaning that market velocities can change and evolve. The enterprise systems industry is just one example of a market that has fluctuated over time between high and moderate, as will be demonstrated in this upcoming study.

The tendency to create stable routines when markets begin to stabilize is more readily understood (Helfat, 1997; Nelson and Winter, 1982). Moreover, maintaining more experimental dynamic capabilities, such as those of an Eisenhardt and Martin (2000) nature (i.e., simple, unstable, experiential dynamic capabilities with unpredictable outcomes) once a market becomes more stable, can be costly and ineffective (Collis, 1994). However, what is less understood is when the market becomes increasingly dynamic and uncertain due to e.g., a new technology or entrant. In this case the evolutionary fit of a firm's existing operational capabilities, as well as a firm's existing dynamic capabilities, could become questionable, while the effectiveness of building new

dynamic capabilities could be uncertain (Helfat et al., 2007; Teece, 2007). For many companies, disassembling established routines that have been in place for years can be a difficult task in itself (e.g., core rigidities, see Leonard-Barton, 1995). It can be expected that when market velocities are dynamic, the capacity to know when and how to make transitions—from stable and detailed dynamic capabilities to unstable and simple dynamic capabilities or vice versa—is crucial for attaining a sustainable competitive advantage.

Gathering empirical evidence is the next step (Peteraf et al., 2013). This study essentially focuses on the *dynamic perspective* on market velocity, while also taking into account the two other views on bridging Eisenhardt and Martin (2000) and Teece, Pisano and Shuen (1997)'s views on dynamic capabilities. The organizational drivetrain metaphor from Di Stefano et al. (2014) is one of the very few conceptualizations of the intertwining and interrelations between the Eisenhardt and Martin (2000) and Teece, Pisano and Shuen (1997) views of dynamic capabilities. Accordingly, the refutation or corroboration of this idea is kept in mind as a part of the larger empirical goal of this study.

By observing the transitions in the nature of dynamic capabilities over time, how Teece, Pisano and Shuen (1997)'s and Eisenhardt and Martin (2000)'s dynamic capabilities co-exist (if they do) and if they interrelate, the aim is to gain a better understanding of dynamic capabilities. Moreover, important new insights can be developed as to whether dynamic capabilities can explain a (sustained) competitive advantage. Thus, the research questions, when taking a *dynamic perspective* on market velocity, are: *1) how relevant is the Eisenhardt and Martin (2000) vs. Teece, Pisano and Shuen (1997) debate; 2) how do dynamic capabilities transition in their nature; and 3) how do the Eisenhardt and Martin (2000) and Teece, Pisano and Shuen (1997) views of dynamic*

capabilities intertwine and interrelate? These questions will be explored in the following sections of this chapter.

4.3. Methodology

In the literature, the dynamic capabilities perspective is widely noted as limited and empirically lacking, thus the method of choice is theory building by conducting a holistic multiple case study (Eisenhardt, 1989; Eisenhardt and Graebner 2007). A qualitative case design provides richer data and a better explanation of behavior when theory is lacking (Bourgeois III and Eisenhardt, 1988). With this approach, the aim is to develop theory by finding patterns in the case data via replication logic, not just within cases but also across cases, in order to extend (or refute) a theory in development (Yin, 2003). Multiple empirical cases allow for a more transferable and robust implication for theory than a single case would (Langley, 1999; Yin, 2003).

A literature review was also conducted, beginning with the two seminal articles themselves. Subsequent literature was reviewed stemming from the Peteraf et al. (2013) study that utilized a historiograph method to not only review all of the most relevant cited works on dynamic capabilities from 1990 to 2008, but also to determine their influence and where they lie in the core body of knowledge. Effectively the most influential articles were identified and reviewed within the debate context and for this study. Di Stefano et al. (2014)'s literature review and analysis was also considered as central to the debate and literature base. Further, to ensure comprehensiveness, all studies that have cited the Peteraf et al. (2013) and/or Di Stefano et al. (2014) studies were also added to the literature foundation of this study.

The unit of analysis chosen is new product development as it has received increasing attention as one of the prime examples of a dynamic capabilities (Barrales-Molina et al., 2015;

Bruni and Verona, 2009; Danneels, 2002, 2010; Pavlou and El Sawy, 2011; Schilke, 2014). Eisenhardt and Martin (2000) themselves also declare new product development is a dynamic capability. Eisenhardt and Martin (2000) state that new product development is a dynamic capability that alters the resource configuration(s) of the firm, "by which managers combine their varied skills and functional backgrounds to create revenue producing products and services (e.g., Clark and Fujimoto, 1991; Dougherty, 1992; Helfat and Raubitschek, 2000) are such a dynamic capability" (p. 1117). Put another way, new product development "is one of the mechanisms by which firms create, integrate, recombine, and shed resources" (Danneels, 2002; p. 1096). These product innovation capabilities are not only geared at creating and developing new or innovative products, but they are also geared towards creating new capabilities or altering existing ones. The reflexive quality of new product development (Danneels, 2002) is reminiscent of the concept discussed by Helfat et al. (2007) where a dynamic capabilities can alter other dynamic capabilities or even alter and renew itself. This entails that new product development encompasses more than just the product-specific objectives such as sales and market share. New product development also includes the creation of new processes and capabilities, some geared towards the exploration of new customers and technologies (Danneels, 2002).

4.3.1. Research Setting

The research setting chosen for this study was the enterprise systems industry. New product development is essential in this industry. It is necessary for operational survival as well as keeping up with changing trends in the market. This industry faces many technological opportunities that keep new product development departments on alert, and it is in such a setting that the renewing and reflexive qualities of new product development could be observed best. Further, the enterprise

systems industry demonstrates characteristics of a market with dynamic velocity due to the presence of external technological opportunities. A dynamic market is optimal for witnessing the expected dynamic capabilities transitions and interrelations between the Eisenhardt and Martin (2000) and Teece, Pisano and Shuen (1997) views. While researchers following Teece, Pisano and Shuen (1997) have pointed out that dynamic capabilities are especially important in rapidly changing environments, Eisenhardt and Martin (2000) observe that dynamic capabilities also matter in moderately dynamic environments (Stadler et al., 2013). Further, Helfat and Winter (2011) note that firms can (and do) utilize dynamic capabilities even in relatively placid environments. Viewing a dynamic market with a range of velocities is necessary to view transitions over time, as well as gain insight into potential interplay between the views of Eisenhardt and Martin (2000) and Teece, Pisano and Shuen (1997) with regard to new product development.

The enterprise systems market shows properties of such a dynamic market. Enterprise systems are industry-specific, customizable software packages that integrate information and business processes in organizations (Markus and Tanis, 2000). Enterprise systems are often referred to as the backbone of the organization (Engelstätter, 2012). Enterprise systems encompass many types of software ranging from customer relationship management (CRM) to content management systems to larger ERP solutions (Hendricks et al., 2007). The enterprise systems market experienced an increase in velocity in the 1990s when growth rates increased rapidly and new players joined the market (Kumar et al., 2011). Following this growth another major change in the market occurred when demand for added functionalities increased. This demand was paired with a need to shift the development focus from the internal integration of enterprise systems components in an organization to external integration. The technology to facilitate external integration is called *web services.* This technology, which emerged at the turn of the century, also

paves the way to modularity (Kumar et al., 2011), where the larger more engineered enterprise systems can be broken down into smaller modules.

In the early 2000s was another shift, this time with the deployment model. In the classical model, called *on premise,* enterprise systems are sold and delivered in the form of software code which runs in a dedicated way for a particular customer organization. At the turn of the century a new deployment model emerged, where Application Service Providers (ASP) increasingly began hosting the enterprise systems solutions on behalf of customer companies (Hoch, Kerr, Griffith, et al., 2001). This reduced maintenance and infrastructure fees for customer companies; however, enterprise systems vendors had to host each customized solution separately and experienced scalability limits as a result. A move from on premise or an ASP model, to a more centralized deployment model, or SaaS, occurred in response to these issues (Turner et al., 2003). SaaS is one part of what is known as the cloud, and it is on the application level. Software companies hosting their offerings "in the cloud" has become more and more common. A noteworthy example is that now most programs, even Microsoft Office programs, are now deployed and offered online through a browser.

This is the current phase of changing the landscape within the enterprise systems industry. The majority of enterprise systems vendors state that their goal is to move towards a SaaS deployment model in the near future (Forrester, 2012). Moving from an ASP model towards a SaaS deployment model occurs in levels, each allowing for varying degrees of scalability and customizability (Chong and Carraro, 2006). The SaaS deployment model also provides the potential benefit of the sharing of data or resources between customer companies or partners (Dubey and Wagle, 2007). These changes mean SaaS will not only alter the software solution itself, but it will cause a great deal of restructuring within the enterprise systems vendors that adopt

SaaS. Further, the deployment model change SaaS brings fosters eco-system connections, also with companies that previously operated in an industry other than that of the enterprise systems industry. Thus, with a variety of new options for deployment model changes and inter-industrial linkages, this will influence both business models and eco-system developments. With the rapid increase in velocity in the 1990s, the introduction of SaaS in the mid-2000s and the complementary innovations and eco-system developments, the enterprise systems industry is an ideal dynamic market setting for studying dynamic capabilities. Dynamic capabilities have been and will be paramount for both surviving and benefiting from these major game altering challenges.

For this study the unit of analysis will be new product development. The role of the product development department for firms is to maintain, create or modify existing or new products, which means this department can alter the resource base often. Software development dynamic capabilities are thus capable of making a new product. Eisenhardt and Martin (2000) note the function of such a department, in making new products, as a dynamic capability specifically. In light of SaaS adoption, focusing in on new product development will provide the most fruitful contributions to the resource base.

4.3.2. Case Selection

The setting for the study is the enterprise systems market in a Northern European Country, where there has been a recent increase in adoption of the SaaS model as well as evidence of increasing eco-system and product development innovations. Within Northern European Country, there are two companies, ERP1 and ERP2, which are both in the top three in market share in the SME market. The similarities between the samples allow for the opportunity for transferability of the results and observing patterns. The case design and selection kept (direct) replication logic in mind.

ERP1 and ERP2 have similar ERP offerings and similar customer bases, so much so that, at times, they overlap. In Figures 4.2 and 4.3 (below), revenues for both ERP1 and ERP2 for the past decade are shown. ERP1 and ERP2 show a difference in the sustainability of growth and revenue pattern, so while these cases are similar, the differences can allow for a range of observations in exploring dynamic capabilities. Table 3.5 (in Chapter Three) gives an overview of the two enterprise systems firms from the Northern European Country.

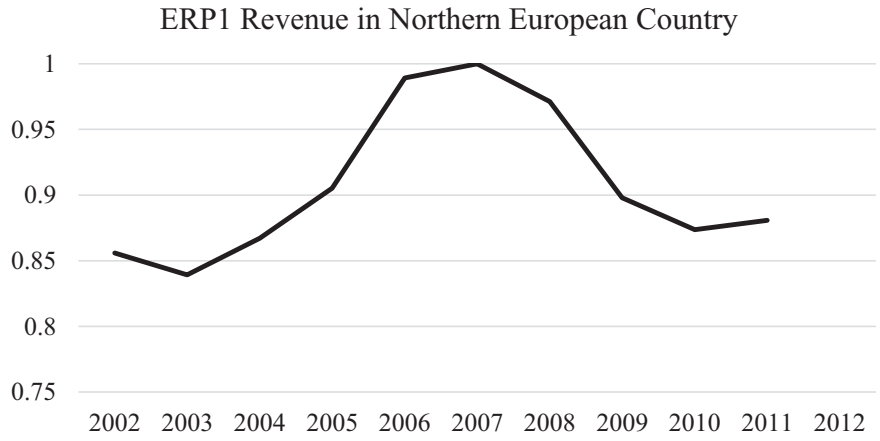

Figure 4.2. ERP1 Revenue in the Northern European Country, normalized

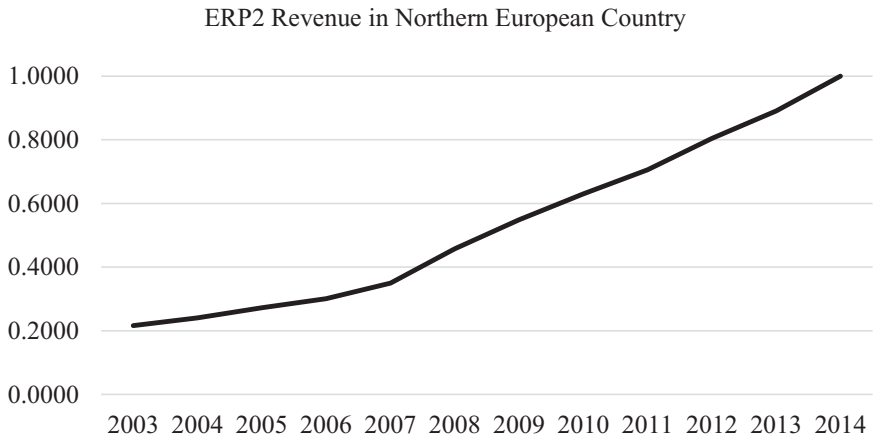

Figure 4.3. ERP2 Revenue in the Northern European Country, normalized

4.3.3. Data Collection and Analysis

Several data sources were relied upon: (1) reoccurring semi-structured interviews with the most relevant executives at the focal firms; (2) reoccurring workshops at the focal firms where multiple relevant executives from both the IT and business sides of the firms were present in addition to the most relevant executives; (3) financial reports and documents; (4) insights from administered survey questionnaires, and (5) online publications and blog updates from the focal firms and industry experts. The variety of sources allowed for an ample mix of hard and soft data. All data sources was used in triangulation, often iteratively. The overall time period studied was 2011 – 2015. Regarding the soft data collected, interviews were semi-structured. A semi-structured questionnaire was created by adapting Pavlou and El Sawy (2011)'s measurement criteria for empirically measuring dynamic capabilities in new product development specifically (see Appendix D). New product development was the unit of analysis of this study, and the

measurement criteria used by Pavlou and El Sawy (2011) was used a starting point to generate questions relevant for the context of SaaS adoption and implementation. Prior to the interviews, a "fact-checking" survey questionnaire was also sent out to interviewees to be filled out and returned prior to the start of the final interviews (see Appendix E). The interviewee responses to the survey questionnaire were used as a starting point for the interview agenda, and the semi-structured interview questionnaire was then also considered during remainder of the interview process.

Regarding the hard data, longitudinal financial data was obtained both via business documents and qualitative interviews for the past decade (see Figures 4.2 and 4.3 above). The soft and primary data sources were longitudinal qualitative semi-structured interviews, collected from the 2 focal firms in person. The interviews were conducted in the period of 2011 – 2015, however interviewees would reflect back as far as the mid-1990s in their responses. All interviews and workshops were recorded and transcribed shortly after their occurrences.

All workshop attendees were key executives that played a significant role in SaaS adoption. Interviewees that were chosen were those that could answer best with regard to SaaS adoption as they played larger roles in the decision making regarding SaaS over time. These interviewees were interviewed multiple times over the course of the study. Interviewers present were the main author and two senior researchers, one of whom who was also present during all the analysis sessions to increase credibility and dependability. Table 4.2 provides more information regarding the positions of these key executives. Of particular importance was the triangulation between the hard data from the financial documents and reports, and the interviews and workshops. This approach was taken to enhance objectivity (Mitroff, 1972) and reduce potential biases (Huber and Power, 1985; Miller et al., 1997). This was also to ensure the validity of both the retrospective and the real-time data.

Timelines and financial data were then further corroborated with follow-up qualitative semi-structured interviews with the key executives at both firms.

ERP1		
Interviewee	ERP1(1)	ERP1(2)
Position	Technology Director Cloud Solutions (2012 onward) Product Line Manager [for ERP1's SaaS solution] (circa 2012)	Development Manager for Business Unit Cloud Solutions
ERP2		
Interviewee	ERP2(1)	
Position	Director Architecture and Innovation	

Table 4.2. Overview of the Key Interviewees at the ERP Vendors

Transcripts were reviewed by the main author and a second researcher. The transcripts were thematically coded accordingly with MAX-QDA and Atlas.ti software. Coding was primarily thematic, where codes were utilized to attempt to observe software development routine alterations over the entire time period. Data displays with chronological events were crafted after interview data was coded and used to assist in providing a rough indication of temporal durations and transitions of dynamic capabilities (Miles and Huberman, 1994). These were compiled prior to the final follow-up interviews, so these were able to be discussed further and validated by the key executives during the interviews.

4.4. Results

The results section will begin with a brief background summary, followed by within-case analyses starting with ERP1 then moving to ERP2. Finally, this section will conclude with a cross-case analysis. For each case, insights into the nature of observed dynamic capabilities were explored in the enterprise systems industry surrounding the introduction of SaaS. As previously mentioned,

the embedded focus in both cases will be software development. The overall time period considered is from the mid-1990s until 2015. Within this time, the noted eras were: Pre-SaaS (including the convergence phenomenon of software integration evolving into ERP1 and ERP2, and the introduction of web services); SaaS Adoption; and Post-SaaS Adoption (including software eco-systems and meta-driven application developments). Table 4.3 in the following section breaks down these eras for each case by years.

	Pre-SaaS	SaaS Adoption	Post-SaaS Adoption
ERP1	mid-1990s - 2000	2000 – 2010	2010 – 2015
ERP2	mid-1990s - 2000	2000 – 2015	

Table 4.3. Time Periods for Each Case

4.4.1. ERP1 Within-Case

In the 1990s, ERP1 began experimenting with the software integration of an organization's internal departments, prior to any demand in the market. ERP1(1) notes "I don't think there was at that moment yet a demand from the market, because there were hardly any solutions like this [i.e., ERP1's product] on the market." Nonetheless, ERP1 created an advanced solution. ERP1(2) perceived the dynamism of the market as continually increasing, noting the introduction of SaaS in the mid-2000s into the market as a more volatile time. ERP1(2) notes "it was a market with threats with new entrants…there were international companies coming in." When asked about the Northern European Country specifically, ERP1(2) notes that the new competition came from "mainly local start-ups." ERP1 managed to use the opportunity of SaaS to increase growth greatly until 2008 when revenue growth declined again. In the post-SaaS adoption era revenues are now on the incline in the Northern European Country again.

Pre-SaaS (mid-1990s-2000)

Initial software ideas, none of which were the result of detailed analytical software development routines, stemmed from both the company's internal needs and from employees' interest. The idea for integrating the software across all company departments started as an experiment with no explicit planned outcome. When approaching the opportunity, ERP1 noticed that they themselves needed a more integrated internal software system, and ERP1(1) notes that ERP1 as a company decided "let's develop an application that solves the [ERP integration] issue for us and also creates a commercial offering that we can sell." ERP1(1) notes ERP1 sensed "that opportunity as something we can put on every desk in a company, so we took that opportunity." The idea for this kind of software integration was strengthened in the second half of the 90s when the company began to grow on an international level. "[ERP1] was a growing company and it consisted of multiple enterprises, so the need of aggregating data and consolidating became obvious… so companies having multiple divisions, probably in multiple countries, that's why you need to bring information together," ERP1(2) notes.

ERP1 was utilizing a simple *trying* rule in their software development routines. The trying rule allowed for experimentation in an organic way where the form of the final solution was not predetermined. ERP1(2) explains this rule as "trying, sometimes. Trying is the word." ERP1(1) explains the research teams "start small and make some prototypes." ERP1(2) points out that sometimes with trying there are failures but that it is very useful to know what not to pursue, as well as knowing what customers think.

Management interests and involvement, cross functional collaboration and short lines between developers and board members played a key role in the explorations of new software

solutions at ERP1. ERP1(1) was very involved during this experimental phase, noting "I'm always one of the pioneers when new technology is used or introduced" and explains that, at this time, ERP1 was a young company full of similar minded people, each eager for new technologies. When the Internet became ubiquitous, interest in software integration also grew. ERP1(1) notes that "everybody that I knew at ERP1 at that time was getting internet accounts and then, especially if you look at our board, the original founders of ERP1, Founder1 and Founder2, they are the same... very technology aware and also want to use latest technology." The tech-minded founders would work closely with research teams in the research department during this time. ERP1(1) states that the real decision to begin to build an integrated enterprise systems solution was a result of the board members working with the heads of the research teams. ERP1(1) notes there were "very short lines" between the CEOs and the research team leaders at this time. ERP1(1) notes "the one who is in charge of that research team, who obviously has a direct link with the board, gives let's say direction to what kind of research areas need more attention." The short lines and interactions fostered overall experimentation and the adoption of the ideas coming from the research teams.

Once a research area was deemed worthy of more attention, there were routines that could be followed to move forward. ERP1(1) discusses that the ERP integration concept was one of such research areas, noting "we need something that can replace [the old internal solution] and automate all our processes" giving the examples of CRM, HR, workflow and so on. Once there was proof of concept and an outcome to work towards, ERP1 could build more structured routines to create what would end up being their more complex ERP integrated solution.

Overall, ERP1's dynamic capabilities in software development demonstrated an initial experimental nature, as per Eisenhardt and Martin, (2000), that was quickly followed with more detailed and complex natured elements, as per Teece, Pisano and Shuen (1997). In the beginning,

processes were primarily simple and experimental, which corresponds with the marked newness of processes and the infancy of the company. An example is that the trying rule was used within the research teams as well as by founding board members. These simple, experimental routines were utilized during the exploration of new technological opportunities, such as ERP integration followed by web services and so on, in order to test the waters. Once certain ideas passed the proof of concept round, a decision to invest further and create more stable routines could occur, demonstrating a shift towards a more detailed nature. Accordingly, the shift in ERP1's software development routines demonstrate an interplay between the views of Eisenhardt and Martin (2000) and Teece, Pisano and Shuen (1997) during this time period from the mid-1990s to 2000. This mechanism, and specifically the shift from simple and experimental routines as per Eisenhardt and Martin (2000) towards more detailed and complex routines as per Teece, Pisano and Shuen (1997), is a pattern that is observed in other time periods as well.

SaaS Adoption (2000-2010)

In the period where SaaS emerged as a new technology and business model, ERP1's activities involving market research and scanning the environment to see what competitors were creating had become more departmentalized around specific functions. ERP1(2) notes "you have sales managers, business unit managers, people on the market, you see things happening around you." ERP1(2) notes that in cases where there is an opportunity, the rule of thumb is: "if you get one or two board sponsors, let's go for it." Despite this mix of organized functions and a simple rule, ERP1 was still a late comer with regard to SaaS adoption.

ERP1 focused on the maintenance of and support for their on premise (i.e., non-SaaS) ERP solution. ERP1 had first begun utilizing web portals for this solution; however, it soon became

clear to ERP1 that competitors were offering solutions that were far superior, because they utilized SaaS principles. ERP1(2) recalls "we could find that on [the other enterprise systems'] websites, I think 2002, 2003." ERP1(2) points out that "we lost quite some customers in the beginning" to other enterprise systems firms including ERP2 not just due to the fact that the existing solution had become too complicated for the SMEs and accounting firm markets, but also due to competitors offering a less complicated SaaS solution as an alternative. As a result, ERP1 realized "just the portal is not it enough," ERP1(2) reflects, and around 2004 a big decision was made to pursue a SaaS solution.

The trying rule and experimental stages in software development from the pre-SaaS era remained in place and were utilized again during the development of ERP1's first SaaS solution. ERP1(2) said the proof of concept process began with "just a small team, try it for a year, see if it works." ERP1(1) noted it was an experiment, with ERP1(2) noting the team was told they would "get one million to build it and then it should work, otherwise we will stop." ERP1(1) noted it "started with ten people max." ERP1(2) noted that once there was proof of concept, the solution was tested on less than ten percent of the target market, namely accounting firms and SMEs. Once more SaaS proved to be successful. ERP1(2) says ERP1 "jumped," and seized the opportunity, because re-attaining the lost market segments was a priority.

Accommodating the new solution began with "just make it simple, put a call center in place, so just kind of business unit. And later, if it's successful, it can become an entity." ERP1(1) notes that later a new branch was set up and structured, "from our operational, inside the commercial site, the customer-facing side, we more or less set up a new entity within the organization" that also had "dedicated people, with only focusing on getting [ERP1's SaaS solution] into the market as a first assignment." Therefore, the decision towards SaaS had dual

effects: (1) it renewed both the product development department by forming a small focused team and (2) forced a restructuring of the organizational structure within the resource base to support this team and bring the new solution to the market.

This time period saw the transition in the dynamic capabilities in software development move from one of a more Eisenhardt and Martin (2000) dominated nature to that of a more routinized and structured nature. The Eisenhardt and Martin (2000) to Teece, Pisano and Shuen (1997) interplay pattern seen in the previous time period was also evident in this time period, where the newness of SaaS was approached first with experimentation and followed up with routinization. Since the pattern was enacted to approach SaaS at the same time ERP1 was still developing and maintaining the non-SaaS on premise ERP software product, elements of both experimental and complex natures were found to exist simultaneously in the dynamic capabilities in software development.

Post-SaaS Adoption (2010-2015)

ERP1(2) notes "around 2010, there the main decision was made to invest really a lot in our SaaS solution," because at this time ERP1 was one of the top three SaaS players in the market. The new organizational entity dedicated to SaaS was made fully independent in 2012. The SaaS solution had been "getting traction" and growing "thirty [to] forty percent a year," while the "rest [i.e., on premise non-SaaS software sales] was not growing or maybe a little bit declining," and, as ERP1(2) notes, ERP1 decided around 2010 that it was time to expand internationally with SaaS. This meant the end of experimentation and the beginning of a more structured coordinated effort towards the SaaS solution.

Despite this shift towards a more routinized approach of software development, the trying rule was still applied to software development processes. For example, the trying rule was applied to approaching software extensions such as providing apps to access the product on mobile devices such as tablets. ERP1(2) says "for example we build a first app on [large software company's new device], just to try it, and it did not work out… but we will try." If there is some initial success, "then we will get feedback from our customers. So we also believe in getting fast feedback. And if it works we will extend it and if doesn't work," then they stop. The trying rule allowed for the necessary experimentation, which could then be followed up by development routines to pursue more evidence of value through current customers.

A notable shift occurred in the research teams, where the distance between the research team leaders and the board members grew between the SaaS adoption and post-SaaS adoption time periods. In contrast to the pre-SaaS era, ERP1(1) notes "our board is very far away from the details of the software, is more on the controlling and visioning, increasing the company worldwide." Research engineer roles also became more clearly defined, where those in this role "don't look to the markets, they hardly [even speak] to a customer even, that's not their job. Their job is to think of what we can do with new technologies." So while the experimental element of the research teams was preserved in the restructuring and redefining of certain team roles, the connection to the board and outside world was weakened over time as it was increasingly taken over by others.

As previously stated, the SaaS solution was standardized to appeal to accounting firms and SMEs due to decreased market share in these areas. Instead of keeping developments surrounding enhancements of the products and added value in-house, ERP1 outsourced some of the uncertainty to third parties. Accordingly, in order to achieve lost customizations that come with standardizations, third party connections became important. ERP1(1), who was involved in the

beginning of this extension of the dynamic capabilities in software development and remains involved today, notes that ERP1 was "building an ecosystem with partners that could deliver add-on value solutions for our customers." ERP1(2) also notes these partners were "enriching our solution, so the need of custom solution is not so big anymore, because a lot of it is available via [third party] apps." The focus on leveraging third parties to add value to customers, paired with the idea of increasing possible enhancements, can be seen in the extensive app platform developed. As a result, ERP1 is able to focus more on the core software development activities and next generation products such as new software architectures to support new technologies.

An innovation to the dynamic capabilities in software development during this time was the enactment of, referred to by both ERP1(1) and ERP1(2) as, "micro service architecture," referred to as MSA, a new software architecture that allows for quicker changes and thus faster times in rolling out services to market. The pattern of starting with a small-scale experimental approach and advancing to use of a large scale and more organized and routinized approach is observed again: "Our plan is that every year we double that capacity that we put into that team, up to a few years and then this will be exponentially increasing. So after the first researches and proof of concept are delivered, we will start to educate a lot of people and set a full focus on this new platform to transform functionality that we have in [the SaaS solution] and functionality that we have in [the existing solution] to this new architecture," ERP1(2) explains. ERP1(2) also states that to accomplish the functionality of the existing solution within the SaaS solution would take "ten man-years," so the plan is to "start with point solutions, like expense claim functionality," to first achieve a proof of concept.

While there is an experimental element to the beginning of each micro service addition, there is also a structured routine and time allotment in place for how to proceed towards MSA.

ERP1(2) says ERP1 has "set up a new team, which is preliminary the new [MSA] team… and they are using all kinds of new technologies…experimenting, using them in accomplishing [the goal of] setting up a system based on micro services architecture, and allowing them to deliver a change, micro service, within thirty minutes." Then the team has the ability to "completely deploy to the product alliance, fully tested, completely automated, everything automatically deployed, and so on." This development is what ERP1(2) says will allow ERP1 to "become more competitive towards the future." The overall approach is linear with the intention that MSA will be the new architecture for the long-term. The organizational structure was also altered to accommodate this new way of working by dedicating a team to focus solely on MSA.

In this era, the dynamic capabilities in software development continued to shift towards a more detailed nature, as per Teece, Pisano and Shuen (1997), over time; however, there were many instances where the dynamic capabilities in software development showed more experimental natured elements (such as the *trying* rule), as per Eisenhardt and Martin (2000), particularly when there was a need for a new process or to survey a new technology. There were changes to the software development routines observed. These changes include the increase in outsourcing parts of the software development (app creation), and the introduction of MSA, an innovation to the dynamic capabilities in software development. The leveraging of third parties is noted as having been a focus of ERP1, and is an extension of the dynamic capabilities in software development and an important aspect of ERP1's new product development processes.

4.4.2. ERP2 Within-Case

ERP2's entry into the enterprise systems arena occurred midway into the enterprise systems market boom in the 1990s. ERP2 was formed when a software development department left a larger

company to form their own company. The group split from the other company to pursue the ideas that could not be implemented within the previous company, and ERP2 saw many opportunities in the market at this time. ERP2(1) indicated that ERP2 perceived a steady increase in dynamism in the market over all the periods, with a noticeable spike in late 2008, 2009 when "it exploded." ERP2 maintained revenue growth every year within the Northern European Country market throughout the entirety of the time period. ERP2 managed to absorb some of ERP1's SME (specifically accounting) customer base in the early 2000s.

Pre-SaaS (mid-1990s-2000)

ERP2(1) states that ERP2 entered the market as a new entrant bringing forth a new concept for a new solution in this time period. They left the larger company to pursue a software integration idea they had. There were many products for SMEs for separate departments themselves, such as payroll, finance, production, sales, and so on, but no solution that addressed them all existed. Integration of all departments within a company through software was ERP2's drive from the beginning. ERP2 sensed this would become important to the market because of a need they themselves observed at the previous company. ERP2(1) states "we needed something to make our own processes better, so we made it in the same environment and everything we made, we made it generic, so everybody could use it." ERP2(1) notes that the drive for integration fostered a decision where all departments needed to be included, where "even [payroll] has to be in one system." ERP2(1) felt it was their unique selling point at this time.

During the inception of ERP2 there was a focus on a very simple rule that ERP2(1) calls *eat your own dog food*, meaning "everything we made [for customers], we made it also for ourselves." In other words, if, for example, ERP2 saw customers had a need for a product, they

would try to build it for themselves first to see if it was feasible to build for customers. By using themselves as a test market, the group (soon to be founders of ERP2) figured out how to achieve what the integration concept of enterprise systems could achieve for SMEs. They could not predict the outcome of the potential solution at this time, as this was, on a larger scale, unknown to the market as well. This was how this group worked in the previous company when solving innovation puzzles to avoid ad-hoc measures. The simple rule for eating your own dog food was that if it works for the creators, then it is ready to be used by and sold to others.

Once these exploratory processes were successful and a decision was made to move forward, "then we can have a template of one customer and spread it out." Testing on one or a few customers was the next step before rolling it out to the rest of the market. This indicates more routinized follow up processes for execution after the experimental phase of eating your own dog food occurred.

However, upon entering the market as a newcomer, detailed and focused software development routines were not yet in place. Instead, team members assumed multiple roles and carried out much of the work in an improvised fashion. Organizationally, within the previous company, ERP2 was essentially the software development department, embedded in the larger company. Once the department left the previous company to pursue their automation and integration ideals as their own separate entity, ERP2(1) notes that "what now the product management department is doing was done by [external] consultancies [in the previous company]." With regard to the shift from utilizing consultancies to creating a product management department within the new company, ERP2(1) explains that in the beginning it was not structural, "we had to professionalize [product management], and that was mainly a strategy from above [i.e., from top management]." Initially, there were many team members that were responsible for

multiple foci. This was addressed by making routines and responsibilities more pronounced and established. ERP2(1) states, “we decided to make teams responsible, where they should be responsible for, and don’t give them two heads.” Functions such as sales, support, marketing and product management were separated in a structured way to increase not only efficiency but also the predictability of workload per employee.

In the beginning of the pre-SaaS era, dynamic capabilities in software development were primarily that of an experimental nature, as per Eisenhardt and Martin (2000). Outcomes were unknown and experimentation occurred at a high level. This corresponds with ERP2’s newcomer status in the market. Over time there was a shift in the nature of the dynamic capabilities in software development towards a more stable and detailed nature, as per Teece, Pisano and Shuen (1997), an example being the professionalization of the software development department. The *eat your own dog food* rule remained in effect throughout this time period as well, demonstrating not only that elements as per both Eisenhardt and Martin (2000) and Teece, Pisano and Shuen (1997) co-existed at certain moments, but also that there was an interplay between these elements.

SaaS (2000-2015)

ERP2 recognized the business possibilities of SaaS in the mid-2000s and kept track of the developments, but it made the decision to first only invest in a SaaS-like solution a few years later. A third party ASP hosted ERP2’s solution on their Internet servers, and it offered the application as a service to customers. To customers, it appeared as if ERP2 had a full SaaS solution. This solution was also positioned in the market as SaaS. Using an ASP was ERP2’s temporary, ad-hoc solution to introducing SaaS into the market. ERP2 began to experience financial strain as a result of the ASP solution’s maintenance costs. Faced with the odious prospect of having to rebuild their

solutions again in the future to accommodate a full SaaS solution, experimentations to build a new solution began in 2005. ERP2(1) notes that he perceived the market velocity as increasing around this time.

ERP2's routines remained experimental with regard to SaaS technologies, which continued to be important in the market. For scanning potential market opportunities, *eat your own dog food* was still the rule. ERP2(1) explains "even our owners are…we were always on a new technology, we try everything and when you look at it and it works, then it's really happening. …as soon as it's a rumor we try it."

Meanwhile, in the background, another change in the dynamic capabilities in software development was brewing: a new technology called model-driven application development (MAD). The core idea is that application development will not happen via writing code but rather by specifying (graphical) models. In theory, this could mean that ERP2 would never have to rebuild the application solution code again in the future, while also allowing for full SaaS and SaaS-enhanced eco-system capabilities. MAD essentially eliminates the technical level of (manual) application programming by automating it. Due to MAD, functionalities can be added without the need for technical alterations even if next generation programming languages become the new standard. Thus MAD itself can change the software development of ERP2 significantly.

The beginning phase of the development of MAD was highly experimental. ERP2(1) notes "formally we started [building MAD capabilities] in 2005, with one person." It began as a one person project initially without any structured planning or foreseeable outcome. There was "a lot of scepticism" surrounding MAD until a proof of concept was developed in 2009. The one-person team was augmented with other team members and, in short iterative cycles, a working proof of

concept was developed. Once there was a proof of concept, ERP2 switched very swiftly. It was at this point that a top management decision was made to cease work on the existing software solution and focus solely on building MAD. "That was a big decision" ERP2(1) notes. Work on the existing software solution was reduced to incremental maintenance to ensure that current customers would not suffer from this big decision. ERP2(1) describes the seizing actions at this time specifically "like a train going into that market, everyone is going, development is working on it, marketing is working on it, sales is working on it, support is working on it." This denotes a major shift in the company's focus as a whole, which required subsequent organizational changes to accommodate this decision.

One of the rules ERP2(1) notes for how the organization coped with these changes was to "let people be responsible for their work… you cannot have people responsible for two things." This means that if workers become overburdened, particularly during times of change, then "let someone else do it." Roles became more structured, detailed and clear, marking the beginning of the transition towards MAD from the more experimental period before the proof of concept.

Once the decision was made to halt work on the existing solution, all hands were on deck to pursue development of MAD and the new product based on MAD. In order to create structure and more measurable routines, ERP2(1) notes "we planned it, we said: Okay, how many designers do we need on that, how many hands do we need on that… we have a matrix and then we have all those hours, and we made a global planning, we said: add 25 percent, to be sure it's managed." The original scheduling was planned with a 2025 release of the new product, however after discussions with higher executives were held, this was pushed to 2019. "We measure every day, if you want to see it, I can show you today, where we are in this planning." ERP2(1) also notes that the owners, CEO and ERP2(1) all meet twice per month to discuss the planning as well as the

details. This denotes a very detailed, linear, and structured scenario where there is a predictable result. The detailed planning for MAD extended for many years and continues today.

Leading up to the onset of SaaS, ERP2's software development routines shifted toward the pattern-like mode, beginning with a simple, experimental nature as per Eisenhardt and Martin (2000), in order to experiment with SaaS. Once SaaS was decided upon the software development routines became more detailed and stable. Over this time period, the software development routines continued to transition towards being very dominated by a stable and complex nature, as per Teece, Pisano and Shuen (1997). It was also noted at times during the pattern-like mode, elements of both experimental and complex natures co-existed. ERP2 has yet to offer a fully SaaS-based product since MAD has yet to be applied in practice, so ERP2 has yet to enter a post-SaaS adoption era.

4.4.3. Cross-Case Insights

Table 4.4 at the end of this section gives an overview of the results. Overall, the dynamic capabilities in software development began as more experimental, i.e., Eisenhardt and Martin (2000), and steadily became more routinized, i.e., Teece, Pisano and Shuen (1997), over time (mid-1990s-2015). This trend was observed in both cases. Both enterprise systems companies were young companies during the pre-SaaS era. This is reflected in their similar experiences with experimental beginnings. Both perceived the pre-SaaS era to be of low to moderate market velocity, which does not necessarily correspond with Eisenhardt and Martin (2000)'s logic. In low to moderate-velocity markets, companies can develop stable and detailed dynamic capabilities. This was not the case for the dynamic capabilities in software development of both ERP vendors; however, both ERP vendors were in their infancy and routines had yet to be developed. During

this time, everything was new in the market. As compared to their incumbent competitors' perceptions, both ERP vendors perceived the market velocity to be less volatile.

Both enterprise systems vendors made transitions towards having more detailed and complex software development routines, as per Teece, Pisano and Shuen (1997), over the culmination of the studied eras. ERP1's routinization of the dynamic capabilities in software development was more compartmentalized and specialized than ERP2's. ERP1's software development routines shifted towards a nature reminiscent of the views of Teece, Pisano and Shuen (1997), although it still allowed for experimental elements, as per Eisenhardt and Martin (2000), to exist. An example is the routinization of the research team roles, which included routinized experimental roles to still allow for experimental activities. However, the original "short lines" between the research teams and the board disappeared because of the compartmentalization and specialization developments. ERP2's dynamic capabilities in software development became more routinized once MAD was proven conceptually. Planned outcomes and milestones for MAD were planned for a half decade into the future, and roles are very clearly defined. This is surprising, because despite the complex routinization surrounding MAD, MAD itself is still quite experimental as this new development has yet to be seen in practice.

The transition in the dynamic capabilities in software development from an initial experimental nature, as per Eisenhardt and Martin, (2000), towards a more detailed and complex nature, as per Teece, Pisano and Shuen (1997), simultaneously occurred with a perceived increase in market velocity increase surrounding SaaS's introduction, and the subsequent perception of a market that was slowing down in the post-SaaS adoption era. The overall shift in the dynamic capabilities in software development from experimental and simple to detailed and complex also corresponds with interviewees perceiving a plateauing of market velocity over the whole time

period. However, both companies still held onto some experimental elements as per Eisenhardt and Martin (2000), which suggests that the market never became as predictable as that of a moderate-velocity market. Interviewees at both companies indicate they were kept on their toes throughout the three observed time periods despite the perception of the overall steadying of the market velocity, indicating the presence of sporadic fluctuations and spikes in velocity.

Triggered by these fluctuations and spikes in the market velocity, a mechanism of interplay between the views of Eisenhardt and Martin (2000) and Teece, Pisano and Shuen (1997) was also observed for both cases. The first try-then-seize-or-stop mechanism had a pattern-like mode which began each time the companies had to face something new, such as a new technology like ERP integration or SaaS. In the beginning of the pattern-like mode, experimental and iterative processes were enacted for exploration, as per Eisenhardt and Martin (2000). In this experimental mode, once a proof of concept was reached, the ERP vendors would go "all in," meaning a large portion of their focus and resources would be dedicated to scaling. More structured and detailed routines then were used to move forward, as per Teece, Pisano and Shuen (1997). This pattern was reminiscent of the *organizational drivetrain* metaphor offered by Di Stefano et al. (2014), where natures of routines from both the views of Eisenhardt and Martin (2000) and Teece, Pisano and Shuen (1997) were linked and worked together.

This try-then-seize-or-stop mode also shifted from an experimental and simple to a detailed and complex nature, and this shift can be seen as a microcosm of the larger transitions that were observed over the whole time period. The try-then-seize-or-stop organizational drivetrain mechanism was observed in both cases and within each time period. This suggests a pattern of new (technological) opportunities popping up sporadically during each era rather than a consistent stream of increasing opportunities. This indicates a more nuanced picture of perceived market

velocity, where while the market velocity was on average noted as higher than that of a moderate-velocity, there were perceived velocity spikes over the whole time period. Sticking to a bad idea in software development for too long can be very problematic in a market with such high-velocity elements. The trying aspect of the try-then-seize-or-stop organizational drivetrain mode mitigates this risk.

Examples of the organizational drivetrain mechanism can be seen in the pre-SaaS era, where both companies employed similar rules with the *trying* rule at ERP1 and the *eat your own dog food* rule at ERP2 (cf. Cusumano and Selby, 1995). These were used to approach the newness of the ERP integration principles. However once a proof of concept was achieved, in both cases the experimental-natured rules would shift towards a more routinized nature. In the SaaS era, this mechanism was seen from start to finish in the examples of ERP1's creation of a SaaS solution and ERP2's MAD. For ERP1, in the post-SaaS adoption era, try-then-seize-or-stop was seen again with the decision to pursue software development extensions such as the app store and MSA. The try-then-seize-or-stop mode was observed at times that corresponded with a novelty factor of a new opportunity in the market.

Finally, there were moments where elements of both experimental and complex natures were found to exist simultaneously in both cases. An example is ERP1's research teams in the post-SaaS adoption era. While these team member roles were highly defined and routinized during this era, there were still isolated roles dedicated to technological experimentation to ensure the company would not miss new opportunities. Another example of co-existence was seen at ERP2 where the highly detailed and analytical software development routines for the ASP solution were occurring at the same moments when the try-then-seize-or-stop mode was enacted to explore MAD.

Phase	Attributes	ERP1 Case	ERP2 Case
Pre-SaaS (mid-1990s-2000)	*Perceived market velocity*	Moderate	Low to Moderate
	Dynamic capabilities in software development natures and transitions observed	Experimental nature while a newcomer, and transitioned towards a more detailed and complex nature (i.e., the pattern-like mode used to approach ERP integration principles). Elements of experimental and complex natures co-existed.	Experimental nature while a newcomer, and transitioned towards a more detailed and complex nature, i.e., professionalization of the software development department. Elements of experimental and complex natures co-existed, i.e., *dog food* rule had consistent presence.
SaaS Adoption (2000-2010)	*Perceived market velocity*	Moderate to High, with high-velocity elements specifically around 2004	Moderate to High, with high-velocity elements specifically noted around 2005 and 2008
	Dynamic capabilities in software development natures and transitions observed	Transition to a more complex nature, with experimentally natured elements surrounding SaaS developments. Elements of experimental and complex natures co-existed.	Over the whole time period, a movement towards a very structured, detailed and complex nature was seen. An interplay pattern from simple and experimental to detailed and complex was seen, i.e., earlier stages in the development of MAD Elements of experimental and complex natures co-existed.
Post-SaaS Adoption (2010-2015)	*Perceived market velocity*	Moderate-High	
	Dynamic capabilities in software development natures and transitions observed	A shift to a detailed and complex nature, with experimentally natured elements, i.e., MSA and third party additions. Elements of experimental and complex natures co-existed.	

Table 4.4. Overview of the Observed Natures of the Dynamic Capabilities of ERP1 and ERP2 from Pre-SaaS through Post-SaaS Adoption

4.5. Discussion

The research questions in focus were, when taking a *dynamic perspective* on market velocity: *1) how relevant is the Eisenhardt and Martin (2000) vs. Teece, Pisano and Shuen (1997) debate; 2) how do dynamic capabilities transition in their nature; and 3) how do the Eisenhardt and Martin (2000) and Teece, Pisano and Shuen (1997) views of dynamic capabilities intertwine and interrelate?* These will be reflected upon and answered in this section.

While "a healthy debate around these issues [i.e., in the Teece, Pisano and Shuen (1997) vs Eisenhardt and Martin (2000) debate] can sharpen thought, enliven the conversation, and spur greater research productivity" (Di Stefano et al., 2014, p. 321), the danger remains that focusing only on the differences between Teece, Pisano and Shuen (1997) and Eisenhardt and Martin (2000) can obscure what is happening in reality. The observed results of this study provide empirical evidence that there is more nuanced interplay between the Eisenhardt and Martin (2000) and Teece, Pisano and Shuen (1997) views than previously discussed in the debate, which is what Di Stefano et al. (2014) conceptually suggest. The results also offer an empirical observation of the organizational drivetrain metaphor as per Di Stefano et al. (2014), and an extension of the dynamic bundle concept of Peteraf et al. (2013).

There is also an indication, after taking a dynamic perspective on market velocity, that market velocity is not the only influencer at play with regard to the nature of dynamic capabilities and transitions. The gradual transition towards routinization of the dynamic capabilities in software development observed in both cases, despite market fluctuations throughout the three periods analyzed, indicates that the boundary conditions of "moderate" and "high" velocity are far too limiting. Teece (2007) also suggests that there are many more elements, or "microfoundations," that can affect the nature of dynamic capabilities, and interestingly cites Eisenhardt and Martin

(2000) as contributing to the list of microfoundations as well. Examples of such that are present in this study's results are firm growth (domestically as well as internationally) and firm size, and management's entrepreneurial mindset as compared to managers with excessive risk aversion (Teece, 2007). This has many implications for the Eisenhardt and Martin (2000) vs. Teece, Pisano and Shuen (1997) debate, as the current debate solely focuses on the market velocity in explaining and predicting the nature of dynamic capabilities. If other factors play a role in the transitions in the nature of dynamic capabilities, then this can have an impact on the explanation of a (sustainable) competitive advantage.

Further evidence from this study supporting the point that the market velocity boundary condition is not as important as the literature has suggested, were seen in moments where software development routines were simultaneously simple and experimental, and detailed and complex. The co-existing natures were also interconnected, like the organizational drivetrain metaphor. It is still important to note, Eisenhardt and Martin (2000)'s claim about higher velocity increasing the experimental nature of the dynamic capabilities is observed in the results. The try-then-seize-or-stop organizational drivetrain mechanism was triggered by new opportunities in the market, which must be addressed in a technological market as that of the enterprise systems market, in order to reduce the risk of missing a possible future competitive advantage. This indicates that when uncertainty in the market increased, so did experimentation activities. Thus (perceived) market velocity does play a large role; however, that role is more nuanced than has been previously discussed. The try-then-seize-or-stop organizational drivetrain mechanism demonstrates that detailed and complex natured elements as per Teece, Pisano and Shuen (1997) were a part of the experimentation process, as observed in the case of ERP1 routinizing an experimental position in the research team and MAD at ERP2. The routines surrounding MAD became very detailed and

complex; however, MAD itself remains highly experimental. This observed co-existence and interplay between the natures of the routines indicates that the views of Eisenhardt and Martin (2000) and Teece, Pisano and Shuen (1997) are interlinked to a greater extent than has ever been noted in Eisenhardt and Martin (2000)'s critique of Teece, Pisano and Shuen (1997).

While this concrete example of the organizational drivetrain challenges the ideas of Eisenhardt and Martin (2000) concerning dynamic capabilities in high-velocity markets, more experimental routines were observed when both ERP vendors needed to reduce the risk of missing the next market shift by probing new technologies. This is reminiscent of Teece's (2007) description of dynamic capabilities purposed for *sensing.* Dynamic capabilities meant for sensing new opportunities involve "scanning, creation, learning and interpretive activity" and firms must "constantly scan, search and explore across technologies and markets" (Teece, 2007, p. 1322). This trend was followed up by more structured, complex routines, which corresponds with another category noted by Teece (2007), *seizing*. Seizing is when a firm makes a decision to invest in an opportunity, and it is addressed in the form of "new products, processes or services" (Teece, 2007, p. 1326). The shift from sensing to seizing is very similar to the shift during the mechanism from Eisenhardt and Martin (2000) to Teece, Pisano and Shuen (1997), once the proof of concept is achieved and the decision to invest occurs. Without any complex routines in a higher velocity market, simply sensing opportunities and not seizing them doesn't ensure a competitive advantage will be achieved. Without the experimental routines in place for sensing, the opportunity may never have been seen in the first place. When the market is dynamic, being fully aware of all possible advantages, and being prepared to seize them, could mean a sustainable competitive advantage by way of subsequent shorter lived advantages (D'Aveni, 1994). The need for both experimental routines for sensing and more complex routines for seizing presents an excellent

opportunity to dig deeper in future research, as these purpose categories of dynamic capabilities developed by Teece (2007) (i.e., sensing, seizing) and the interplay between them were observed in both cases and could lend insight into both the organizational drivetrain and dynamic bundle concepts.

Another notable observation that came from taking a dynamic perspective on market velocity was that of a dynamic capability influencing itself, as seen in the example of the dynamic capabilities in software development at ERP2 transforming into MAD. Helfat and colleagues (2007) noted that while it appears difficult for a dynamic capability "to modify or extend itself," this possibility should not be ruled out (Helfat et al., 2007, p. 4). This highlights the potential relevance of levels of dynamic capabilities and hierarchies, a branch in the literature based on suggestions from Collis (1994), Danneels (2002), Winter (2003), Zahra et al. (2006) and Ambrosini et al. (2009). Further, this branch in the literature could be particularly relevant for the transitions. For example, knowing when and how to make these transitions could make or break a potential competitive advantage and/or influence the sustainability of a current advantage. The conceptualization of Ambrosini et al. (2009)'s regenerative level could lend insight into this capacity. Ambrosini et al. (2009)'s regenerative dynamic capabilities are defined as those that allow a firm to alter or move away from previous "routines to make new routines," in order to establish an entire new direction. Regenerative dynamic capabilities are likely put into action by higher level managers who perceive environmental turbulence and discontinuous or non-linear changes ahead (D'Aveni, 1994). This is another interesting avenue for future research. It could lend insight into the capacity to enact transitions and the interplay mechanism, and thus could have meaningful implications for the Eisenhardt and Martin (2000) versus Teece, Pisano and Shuen (1997) debate which broaches whether the nature of dynamic capabilities in turbulent markets are

simple and experimental or more detailed and complex. The higher level managers enacting regenerative dynamic capabilities may have influence over the transitions and/or interplay between the natures of the dynamic capabilities themselves, which could lend insight into the debate.

The limitations of this study must also be illuminated, one major limitation being that only two ERP vendors in the Northern European Country are used as samples. Further, only dynamic capabilities in new product development, more specifically software development, were considered at each enterprise systems vendor. While the similarities between cases allowed for many generalizations in the findings, more samples within the Northern European Country could help paint a clearer picture with regard to sustainable competitive advantage and SaaS adoption. Further, the SaaS adoption that was focused on is specific to the Northern European Country context and this could vary in other regions. Another limitation when gathering the data from the past is that interviewees were asked to retrospectively discuss the eras of the study which can cause skewed results, despite rigorous efforts to triangulate with hard data during and after interviews. There were some differences between the ERP vendors, i.e., ERP1 is a more international company than ERP2. While this study focused on competitive advantage in the Northern European Country specifically, ERP1 may have more or less advantages in many other countries that could influence the home results in the Northern European Country. Other industries should be explored as well with a dynamic perspective on market velocity, particularly those with a higher level of dynamism. Dynamic capabilities in areas other than software development and new product development should also be investigated in future research.

4.6. Conclusion

In this study, dynamic capabilities in software development at two enterprise systems companies were studied from 2011 to 2015, including historical observations made starting from the mid-

1990s. First, an overall transition in the nature of both dynamic capabilities in software development was observed, from simple and experimental, as per Eisenhardt and Martin (2000) to more detailed and complex, as per Teece, Pisano and Shuen (1997). Taking a dynamic perspective on market velocity allowed for the observation of the longer transitions over the entire time period. A transition in the nature of the dynamic capabilities in software development in the opposite direction, from complex to simple, was not observed in this study; however, it may still be possible to observe such a transition in a different setting. Second, throughout the individual eras, a mechanism was observed that was similar to that of the organizational drivetrain as per Di Stefano et al. (2014). Both enterprise systems vendors used a try-then-seize-or-stop mechanism to address new (technological) opportunities that arose in the market. This pattern also began with an experimental nature, then after a proof of concept was approved, shifted towards a more detailed complex nature. Finally, moments where both experimental and complex natures co-existed at the same time were also observed. These results demonstrate that there appears to be far more overlap between the views of the two seminal articles in debate. It also provides an empirical observation and indication of the organizational drivetrain metaphor.

With the organizational drivetrain metaphor confirmed, the results of this chapter can now be reflected upon to provide insight into the research question (RQ3): *How do dynamic capabilities of enterprise systems vendors influence the implementation of SaaS for value co-creation?* The dynamic capabilities perspective can complete the understanding of value co-creation by offering insights on the firm level.

Dynamic capabilities are "the capacity for an organization to purposefully create, extend or modify its resource base" (Helfat et al., 2007, p. 4), and dynamic capabilities can be conceptualized as the catalyst of organizational changes on the firm level due to an external

technology or market development. The external technology or market development, in this chapter, is increased SaaS adoption in the enterprise systems industry. The enterprise systems vendors' dynamic capabilities essentially facilitate the adaptation, particularly with regard to adopting and implementing SaaS. In this chapter, a dynamic perspective was used for the enterprise systems industry's market velocity so that the enterprise systems vendors' dynamic capabilities in software development could be observed over time. Due to taking a dynamic perspective, shifts in the nature of two enterprise systems vendors' dynamic capabilities could be seen. The enterprise systems vendors both demonstrated a try-then-seize-or-stop mechanism that is an insight into the organizational changes the firms exhibit when adopting and implementing SaaS. This mechanism however was observed to have been internalized differently between the two enterprise systems vendors, influencing the value co-creation strategies of each firm differently.

ERP1 used this mechanism to leverage its value co-creation partners. ERP1 utilized the try-then-seize-or-stop (i.e., *trying)* mechanism in their software development research teams where there was an emphasis placed on leveraging partners for value co-creation for the SaaS solution (i.e., app development). Value co-creation was prioritized as a way to diminish the loss of customizations to ERP1's solution when they shifted to a more scalable SaaS solution. ERP2 internalized the try-then-seize-or-stop mechanism (i.e., *eat your own dog food*, cf. Cusumano and Selby, 1995*)* in an alternative way, by applying it largely to build upon its technological capabilities through its work on MAD. MAD is ERP2's solution to the customization issues that a SaaS solution scaled for the masses would have. ERP2 thus aims to enhance the value creating abilities of the SaaS technology itself instead of focusing on leveraging value from value co-creation partners. Overall, ERP2 looks to create this value through technological advancement

internally whereas ERP1 solves this issue more immediately through pursuing value co-creation activities externally. The differences in the dynamic capabilities in software development allowed the two firms to approach the implementation of SaaS for value co-creation differently (cf. Table 4.4).

4.7. Validation and Evaluation

Regarding the validity and rigor of this research, the credibility, transferability, dependability and confirmability will be reflected upon in an evaluation of the research process (see Lincoln and Guba, 1985). First, credibility refers to the idea of internal consistency, or the confidence in the "truth" of the findings. The participants themselves are the only ones who can validate whether the researchers' observations and suggested meanings are relevant to the participants and accurately reflect the reality as perceived by the participants. Improving credibility was approached in a few ways. Prolonged engagement with the participants and their social context was achieved by the main researcher and two senior researchers. Member checking was another approach taken. Prior to the final interviews, a fact-checking survey questionnaire was distributed, and the responses to the questionnaire were used as an interview agenda starting point (see Appendix E). This way the interviewees could reflect and comment on their responses a second time. All interviews were recorded, were transcribed immediately and all transcripts were sent to the interviewees post-interview for review. At workshops, the intermittent results of the research team (the main researcher and two senior researchers) were presented so that the ERP interviewees could comment on whether the research was accurately reflecting their reality. The workshops as check points during the research process helped to keep the credibility on track over the course of the time period of the case studies.

Second, the transferability of the research represents the degree to which the results the research can be applied to other contexts. In order to increase transferability, a rich description of the research context and the assumptions made during the research to achieve the findings are given, before the findings are integrated into the existing literature. Third, the dependability of the research denotes an emphasis on the need to account for the ever-changing context within which research occurs. Transparency in data collection methods was taken as an approach. Data collection and analyses are described in rich detail in the methodology sections. Questionnaires and interview templates are also shown in the Appendices. Finally, confirmability is when the results can be confirmed or corroborated by others. One approach taken to achieve a higher level of confirmability was when analyzing the transcripts the main researcher and second researcher both reviewed the documents separately and then compared results. This was done in order to promote cross-validation among researchers, and promote a degree of neutrality in the potential bias, motivation or interest of the main researcher. Further, the second researcher also played "devil's advocate" during the analysis sessions. Triangulation of multiple data sources, hard and soft, also contributed to the confirmability of the research.

Chapter Five

Discussion and Conclusion

This chapter commences with a discussion that will give an overarching analysis of all of the findings from Chapters Two, Three and Four, in light of the larger contribution opportunity identified in Chapter One and in order to answer the MRQ: *How can SaaS-based value co-creation in the enterprise systems and financial services industries be understood?*

In Chapter Two, the results demonstrated that an "ideal" convergence phenomenon cycle as per the framework was the path through the relationships taken by the Asian telecommunications and broadcast companies who thrived during the era of network convergence by creating a new mobile TV market. These companies leveraged the opportunities for value co-creation by pursuing synergistic value co-creation modes with fewer unique ties, as per Sarker et al. (2012). Other paths through the convergence phenomenon cycle were also observed however, where the Western telecommunications companies did not pursue synergistic value co-creation modes and instead relied on M&A once the regulative domain preconditions changed (i.e., a function of relationship B). Differences in the perceived pressures by way of relationship A (i.e., the technology evolution) and relationship B (i.e., a firm's institutional preconditions) were noted in the results. Missing from this original convergence phenomenon framework (Figure 2.1) were the dynamic interactions between the levels (environmental, inter-firm and organizational), as well as the organizational level perspective.

In Chapter Three, the inter-relations were dynamically accounted for in the framework and the interlinkages between the domains were visible (Figure 3.1). The organizational perspective is

also included (i.e., the cognitive domain). When exploring the case of the enterprise systems and financial services industries, different convergence phenomenon paths other than the "ideal" were observed. While institutional theory was able to account for the homogeneity in how firms in the same industry perceived pressures (relationship B for each industry), differences in firms' reactions to the perceived institutional preconditions were seen to influence which domain they preferred to leverage when pursuing value co-creation. For example, the ERP vendors both were seen to take action on the normative domain by proactively attempting to change the acceptance of inter-industry ties, specifically targeting the accounting firms as a community. However, there were nuanced differences between the main strategic foci of the ERP vendors. ERP1's main focus became an open platform strategy, whereas ERP2 decided to put forth most of its strategic focus on building upon its technological capabilities. The variations between value co-creation strategies of the enterprise systems vendors were explained in part by differences in the perceptions of pressure on the cognitive domain, where firms' beliefs on how to manage uncertainty surrounding value co-creation can influence orientations with regard to choosing ties (Ambos and Schlegelmilch, 2008; Shane, 1993). The differences between the perceived pressures felt with regard to capital structure on this domain were notably different, where ERP2 could more freely allocate a budget for software development as opposed to ERP1.

This thesis makes an effort to link the institutional domains to the dynamic capabilities perspective, discussed in Chapter Four. The variations in the value co-creation strategies of the two enterprise systems vendors can be further explained by their different dynamic capabilities in new product development, more specifically, in software development. The differences in the dynamic capabilities in software development of the enterprise systems vendors appear to have influenced the different convergence paths the enterprise systems vendors took. Both ERP1 and

ERP2 demonstrated convergence cycles that strayed from the "ideal" path as outlined in Chapter Two by the Asian telecommunication and broadcast companies. It should be noted that strategies residing outside of the Sarker et al. (2012) framework for value co-creation were observed, e.g. neither company pursued more synergistic modes of value co-creation. ERP1 took an open platform approach and ERP2 decided to build upon its technology competencies and create added value internally. This could be due to the idiosyncratic dynamic capabilities of the enterprise systems vendors.

ERP1 took an open platform strategy demonstrating that value can be co-created in other ways than those proposed by Sarker et al. (2012), and this strategy was facilitated by ERP1's dynamic capabilities in software development via the enactment of a "micro service architecture" (a new software architecture that allows for quicker changes and thus faster times in rolling out services to market). ERP1's dynamic capabilities in software development transitioned over time, from initially experimental research teams that worked closely with the board, towards the routinization of the research team roles, which however included experimental roles (albeit routinized) to still allow for some experimental activities. The dynamic capabilities of ERP1 allowed for an open app store and platform strategy, however this was not in line with the view of Sarker et al. (2012). Instead of pursuing unique ties for the additive value co-creation mode, the open platform strategy promoted ERP1 to pursue many similar ties of the additive mode in a more standardized way. Thus, adopting a wider scope with regard to the forms of partnerships could be fruitful in future value co-creation research. Such a wider scope is depicted by Grover and Kohli (2012) who provide a framework for the forms of partnerships with regard to value co-creation. In their framework, the open platform strategy can be realized through the *assets layer*, which is where one firm "contributes specialized IT hardware and/or software or network facilities that

create new value in the form of digital products and services" (i.e., assets on top of a common platform) (Grover and Kohli, 2012, p. 226). This layer would correspond with ERP1's app store focus, for example. Another perspective that could lend insight is that of the open systems strategy, where both competitors and vendors of complimentary products have easy access to the platform creator's proprietary technology (Garud et al., 2002). This concept would allow for the consideration of the reality that many of the collaborators who build value upon one's technology may also be a competitor or have divergent interests, which is a reality for value co-creation that needs further research (Grover and Kohli, 2012).

ERP2 also pursued a strategy outside of the Sarker et al. (2012) framework for value co-creation. This was enabled by their dynamic capabilities in software development, namely model-driven application development (MAD), which creates value without a need for external ties. MAD essentially automates application programming, allowing it to be very experimental despite the highly complex and detailed routines surrounding its creation and development. MAD is an example of a dynamic capability influencing itself, where ERP2 is transforming itself into MAD. Helfat and colleagues (2007) noted that while it appears difficult for a dynamic capability "to modify or extend itself," this possibility should not be ruled out (Helfat et al., 2007, p. 4), and in the case of MAD this can be empirically observed. MAD highlights the potential relevance of levels of dynamic capabilities and hierarchies, a branch in the literature based on suggestions from Collis (1994), Danneels (2002), Winter (2003), Zahra et al. (2006) and Ambrosini et al. (2009). MAD appears to resemble a regenerative dynamic capability as per Ambrosini et al. (2009), which is defined as a dynamic capability that allows a firm to alter or move away from their previous "routines to make new routines," in order to establish an entirely new direction. Regenerative dynamic capabilities are likely put into action by higher level managers who perceive

environmental turbulence and discontinuous or non-linear changes ahead (D'Aveni, 1994). Here lies a link with Teece (2007) who also suggests that there are many more elements, or "microfoundations," that can affect the nature of dynamic capabilities, one being that of a manager's entrepreneurial mindset as compared to managers with excessive risk aversion (Teece, 2007). Therefore, taking a managerial perspective in future research would provide an even deeper understanding into the how and why behind the transitions in the nature of dynamic capabilities. Further, a managerial perspective could also lend insight into the role regenerative dynamic capabilities play with regard to sensing and seizing innovation opportunities, and the entrepreneurial paths firms take as a result. For example, the managerial role is important to new product development as seen in the example of ERP1's "short lines" between the research teams and board members, where the board members were initially highly involved in the process of determining which software development to pursue longer term in a more routinized manner. The influence of these board members may have been responsible for regenerative dynamic capabilities in software development. Further, ERP2's higher-level managerial group also were highly involved in the decision to pursue MAD.

Another potential avenue for future research in the same vein would be to research the perceived importance of new product development as an institutional precondition on the cognitive domain. Managerial perceptions with regard to the importance of new product development could influence how involved higher-level managers are in the experimental routines surrounding software development, for example. Here lies the link between the institutional preconditions of the convergence phenomenon cycle (relationship B) and a firm's (regenerative) dynamic capabilities in new product development, more specifically, software development (relationship 1), which then subsequently influences the convergence phenomenon cycle path the firm may take

(i.e., which domains the firm will choose to leverage). Understanding the managerial role in perceiving the importance of new product development, and the influence this perception plays with regard to dynamic capabilities in new product development, could provide insights into the convergence phenomenon cycle. This could particularly add insight into how firms engage in institutional entrepreneurship activities (such as value co-creation) to shape new emerging markets resulting from the convergence phenomenon.

Regarding these potential linkages between the institutional preconditions and dynamic capabilities in new product development, a process approach could be useful. Whereas many dynamic capabilities studies take a variance approach, a process approach can explain the actions firms take and how they occur, by viewing the actions as events in a sequence as opposed to as variables that influence each other in a deterministic fashion (Markus and Robey, 1988; Mohr, 1982). In taking a process approach, the question then becomes whether ERP1 and ERP2 took on different convergence cycle paths because of the variations in their dynamic capabilities in new product development, or because they perceived different pressures from their institutional preconditions. If the former, then the explanation is that ERP2 developed their dynamic capabilities in software development more so than ERP1, and therefore was in a position to build MAD on the cognitive domain instead of needing to leverage partners on the normative domain to achieve added value creation. If the latter, then the explanation is that ERP2 felt less pressure on the cognitive domain than ERP1 (particularly through the capital structure precondition), which may have allowed ERP2 the freedom to build upon their dynamic capabilities to focus on MAD, whereas ERP1 decided to build upon dynamic capabilities that supported leveraging partners for value co-creation due to perceiving more normative and cognitive pressures than ERP2. Exploring the interplay between these two explanations, via the perceived importance of new product

development as an institutional precondition on the cognitive domain and the managerial role in dynamic capabilities in new product development, would be fruitful in future research.

Further, it is also possible that dynamic capabilities in new product development other than those specific to software development may also prove relevant for the convergence phenomenon cycle path a firm chooses. For example, dynamic capabilities in firm functions surrounding (the dynamic capabilities in) software development, such as in sales or marketing departments, could also play a role during the implementation of SaaS and influence value co-creation. Future research could explore the question of if dynamic capabilities that influence value co-creation are only rooted in the technology driving the convergence phenomenon, or if there are dynamic capabilities in other functions of the organization that play a role.

According to these findings, it appears now that both the dynamic capabilities and institutional theory perspectives interlink. Future research is needed to fully understand the interaction between the dynamic capabilities and institutional theory perspectives, and how they together influence actions of firms surrounding value co-creation strategies. These perspectives could be combined and utilized in future research, to explore other contemporary innovation opportunities occurring as a result of the convergence phenomenon in other industries. A contemporary innovation opportunity that could allow for the combined perspectives to be further researched and elaborated upon, for instance, is that of environmental sustainability in business. One example of an environmental sustainability innovation is through advances in information and communications technologies and digitization, government and utilities communities are able to work jointly to develop an intelligent energy grid system, i.e., smart grid. The smart grid can be used to increase efficiency in energy management practices, enact smart metering integrations, and enable the inclusion of renewable energy alternatives, as just some examples of value co-creation

opportunities. Another example of an environmental sustainability innovation due to the convergence phenomenon is also evident in the emerging sustainable food market, where technologies, such as SaaS and blockchain technology, are connecting firms within larger food supply chains to promote traceability and track sustainability.

Dynamic capabilities can enhance a firm's sustainability capabilities, which in turn plays a critical role in improving the natural environment and addressing climate change (Boudreau et al., 2007; Erdmann et al., 2004; Farrell and Oppenheim, 2008; Richards et al., 2001). Despite this opportunity, there are complex institutional, societal and environmental implications that may hinder sustainability efforts (Melville, 2010; Whiteman et al., 2014; Geels, 2004), and the institutional theory perspective could provide insights into these challenges.

Another contemporary innovation that could both benefit from, and enhance, an integrated approach is the concept of Industry 4.0, which is the trend towards digitization and automation in industries such as manufacturing, automotive, and mechanical engineering. Industry 4.0 comprises a variety of technologies that firms can internalize and integrate in order to enable the development of a digital value chain and automated environment. There are many opportunities for value co-creation as a result, particularly for the additive mode of value co-creation, and/or an open platform strategy. The far-reaching implications in terms of political, social and legal challenges, just to name a few, need to be embraced for dynamic capabilities to be effective (Oesterreich and Teuteberg, 2016), and the institutional theory perspective is thus needed here as well.

One final example of a contemporary innovation opportunity due to the convergence phenomenon lies in the growing biotechnology sector where the digitization of biology at the convergence of the biology, pharmacology and healthcare industries is occurring. The

organizational and industrial implications as the technology evolves can both be expected to play a role as this new sector continues to develop (Pisano, 2006). Future research into these examples of contemporary innovation opportunities would provide a better understanding of the convergence phenomenon as a whole, as well as provide insight into the interlinkages between the institutional theory and dynamic capabilities perspectives.

Summary

Enterprise systems software is software used by companies to enable the flow of information within the company to increase organizational efficiency. Previously this software was deployed and maintained on the customer's premises after paying a license fee. Over the past few decades there has been widespread adoption of a new business model where the software is now deployed and maintained by the enterprise systems vendor and the customer can simply access it through an internet browser for a periodic subscription fee. This new business model, known as the software-as-a-service (SaaS) model, has many implications for enterprise systems vendors adopting SaaS as they must organizationally adapt. This thesis aims to understand several of these implications.

SaaS adoption additionally has many implications for the industrial level, as firms from different industries are also adopting SaaS and offering SaaS services. If parties from different industries utilize SaaS, then they can more easily link (and therefore enhance) their SaaS services among each other and across industries. This opens the door for a new SaaS-based market at the convergence of previously discrete industries. When multiple parties have influence in the creation or enhancement of services, aimed at creating new or added value for customers, this is referred to as value co-creation. There has been an increase in business-to-business (B2B) partnerships within and across industries as a result of increasing value co-creation opportunities enabled by SaaS adoption.

Prior research on SaaS adoption has neglected the value co-creation perspective. This dissertation aims to address this gap. Accordingly, the main research question of the dissertation is**:** *How can SaaS-based value co-creation in the enterprise systems industry be understood?* Two

perspectives, institutional and organizational, are taken in this dissertation to provide insights into this question in an integrated manner.

The dissertation consists of two major parts. The first part of the dissertation focuses on the convergence phenomenon and institutional perspective. When a technological evolution occurs where previously separate services can be integrated through cross-industrial collaborations and new markets can emerge as a result, this is referred to as the convergence phenomenon. Chapter Two, entitled, "*An Integrated Framework via the Convergence Phenomenon for the Emergence of Software-as-a-Service*," delivers insights from the convergence phenomenon perspective. This chapter investigates the case of increasing SaaS adoption in the enterprise systems and financial services industries. What is happening now among these industries is similar to what has happened in the historical case of the telecommunications, broadcast and computer industries due to the convergence phenomenon. Both a literature review and institutional theory were used to build a conceptual framework for the convergence phenomenon occurring due to increasing SaaS adoption. Through exploring the framework against the historical case of the telecommunications, broadcast and computer industries, the results provide examples of an "ideal" convergence phenomenon strategy, and also showed that the institutional contexts of firms can hinder firms from pursuing value co-creation opportunities to achieve this ideal.

Chapter Three, entitled "*Exploring Value Co-creation in the SaaS Era and the Role of Institutional Preconditions*," carries out a case study to offer insights into the relationship between the institutional contexts and value co-creation activities in the enterprise systems, banking and accounting firm industries. Prior research had not considered the institutional contexts firms subscribe to prior to moving into the new market (i.e., institutional preconditions) in relation to value co-creation. Expectations from prior literature that the enterprise systems vendors would

pursue more unique and exclusive partnerships to achieve the full benefits of value co-creation were partially debunked by the results of this study. Results show that perceived institutional preconditions deterred these expected unique and exclusive partnerships, and that firms will find alternative ways of value co-creation (such as an open platform approach) to skirt institutional precondition blockades (such as regulations) when these are perceived. Another insight was that the precondition pressures perceived by firms helped to explain why each of the different industries actively engaged in entrepreneurial activities and behaviors on different institutional domains. Finally, the results indicate that the technology of SaaS allowed for the possibility for a firm to achieve nuance in their value co-creation strategy on the cognitive institutional domain.

The second part of the dissertation aimed to better understand value co-creation through the organizational perspective of dynamic capabilities**.** In order to adapt to a new technological development, enterprise systems vendors have capabilities to learn new routines, which are better known as dynamic capabilities, and these are expected to influence value co-creation as the enterprise systems vendors adopt SaaS. Chapter Four, entitled "*A Dynamic Perspective on Dynamic Capabilities: The Case of the Enterprise Systems Industry Before, During and After the Introduction of SaaS*," explored the relationship between dynamic capabilities and value co-creation. The study commences with a literature review, which illuminated a conceptual debate in the literature regarding the nature of dynamic capabilities. Some researchers defend that dynamic capabilities are complex routines, whereas others defend they must be simple routines in nature. The study then additionally aimed at contributing to the dynamic capabilities perspective by conceptually and empirically exploring the different perspectives of the natures. In order to approach this, a comparative empirical case study was done at two enterprise systems vendors. Result highlights include empirical observations of both of the natures of dynamic capabilities

contested in the literature, simultaneously as well as transitions between the natures over time. These empirical findings indicate that the contested natures not only co-exist, but are more interlinked than previously acknowledged in the literature. With this newfound knowledge, the dynamic capabilities lens was used to lend insight into the value co-creation occurring due to SaaS adoption by enterprise systems vendors. The differences in the dynamic capabilities in software development allowed the two firms to approach the implementation of SaaS for value co-creation differently, where one found another alternative for value co-creation altogether: leveraging the capabilities of the technology itself (i.e., SaaS) to create added value instead of leveraging third party partners to achieve added value. This finding can be linked to the results of Chapter Three, and the dynamic capabilities and institutional theory perspectives are able to be interlinked in the concluding chapter.

Samenvatting (Summary in Dutch)

Enterprise Systemen (ES) zijn computerprogramma's die door bedrijven worden gebruikt om informatie te verwerken met het doel om de bedrijfsefficiëntie te verhogen. Het ES was in het verleden vrijwel altijd geïnstalleerd op de computerservers bij bedrijven. Om een dergelijk ES te gebruiken moesten bedrijven een licentie kopen van de ES-vendor (de leverancier van het ES). In de laatste decennia is er echter een nieuw businessmodel ontstaan waar de ES-software niet meer geïnstalleerd wordt op de lokale servers bij bedrijven maar in plaats daarvan op een server op afstand in beheer van de ES-vendor. De bedrijven die gebruik maken van dit nieuwe ES doen dit via het Internet en betalen doormiddel vaneen abonnement. Het bijbehorende nieuwe businessmodel staat bekend staat als Software-as-a-Service (SaaS; in het Nederlands: 'software als een dienst'). SaaS kent belangrijke implicaties voor hoe ES-vendors werken. Dit proefschrift heeft als doel een aantal van deze implicaties te begrijpen.

Het invoeren van SaaS heeft niet alleen implicaties voor individuele bedrijven, zoals een ES-vendor of een ES-gebruiker, maar ook voor de industrie waartoe zij behoren. Bovendien stappen bedrijven in andere industrieën ook over naar SaaS en bouwen zijn hun (nieuwe) diensten volgens het SaaS-model. Als meerdere bedrijven uit verschillende industrieën SaaS gebruiken dan kunnen zij gemakkelijker verbindingen leggen tussen hun diensten. SaaS kan hierdoor deuren openen tussen industrieën die eerder geen relatie met elkaar hadden met als mogelijk gevolg het creëren van nieuwe markten. Wanneer verschillende partijen invloed hebben in het maken of verbeteren van diensten, gericht op het creëren van toegevoegde waarde voor klanten, dan is er sprake van *waarde co-creatie*. SaaS biedt dan ook mogelijkheden tot waarde co-creatie. De

opkomst van SaaS heeft ervoor gezorgd dat er zowel binnen als tussen industrieën een toename is van business-to-business (B2B) samenwerkingsverbanden voor waarde co-creatie.

In eerder onderzoek naar de invoering van SaaS is er weinig aandacht besteed aan waarde co-creatie. Dit proefschrift heeft als doel dit gat op te vullen door de volgende onderzoeksvraag te stellen: *Hoe kan SaaS-gedreven waarde co-creatie worden begrepen in de ES-industrie?* Dit proefschrift gebruikt twee perspectieven, het institutionele- en het organisatieperspectief, om deze onderzoeksvraag te beantwoorden.

Dit proefschrift bestaat uit twee delen. Het eerste deel van het proefschrift richt zich op het *convergentiefenomeen* en het *institutionele perspectief*. Er is sprake van het convergentiefenomeen als er nieuwe markten en technologieën ontstaan doordat bedrijven uit verschillende industrieën diensten integreren. Hoofdstuk Twee, getiteld *"An Integrated Framework via the Convergence Phenomenon for the Emergence of Software-as-a-Service,"* biedt inzichten over het convergentiefenomeen door te leren van een historische casus over de telecommunicatie-, media- en computerindustrie. De ontwikkelingen in deze drie industrieën lijken overeen te komen met de ontwikkeling rondom het toenemende gebruik van SaaS in de ES-industrie en in de financiële dienstverlening. Zowel een literatuurstudie alsmede institutionele theorie worden gebruikt om tot een conceptueel raamwerk te komen voor het convergentiefenomeen in de context van SaaS. De historisch casus van de telecommunicatie-, media- en computerindustrie wordt aan de hand van dit raamwerk geanalyseerd, en resulteert in voorbeelden van een "ideale" strategie voor het convergentiefenomeen. De analyse laat ook zien dat bedrijven die waarde co-creatie nastreven met een dergelijke "ideale" strategie hinder kunnen ondervinden van hun institutionele context.

Hoofdstuk Drie, getiteld "*Exploring Value Co-creation in the SaaS Era and the Role of Institutional Preconditions,*" presenteert een casestudie in de ES-industrie, het bankwezen, en de

boekhoudbranche en resulteert in inzichten over de relatie tussen de institutionele contexten enerzijds en waarde co-creatie activiteiten anderzijds. Eerder onderzoek heeft de institutionele context van bedrijven vóórdat ze zich op een nieuwe markt begeven (i.e., de institutionele pre-condities) buiten beschouwing gelaten. De resultaten van deze studie weerleggen de heersende verwachting dat ES-vendors unieke en exclusieve samenwerkingsverbanden aangaan om de volledige voordelen van waarde co-creatie te benutten. Deze studie toont aan dat de institutionele pre-condities deze unieke en exclusieve samenwerkingsverbanden kunnen ondermijnen, en dat bedrijven te allen tijde alternatieve manieren vinden voor waarde co-creatie (zoals een open-platform benadering) als zij blokkades in de institutionele context ervaren (bijvoorbeeld wet- en regelgeving). Een ander inzicht is dat de institutionele pre-condities die door een bedrijf worden ervaren ons helpen te verklaren waarom elk van de verschillende industrieën actief bezig zijn met ondernemersactiviteiten en –gedragingen in de verschillende institutionele domeinen zoals bekend uit de bestaande literatuur. Ten slotte, suggereren de resultaten dat SaaS-technologie bedrijven in staat stelt om nuances aan te brengen in hun strategie voor waarde co-creatie op het cognitieve institutionele domein.

Het tweede deel van het proefschrift richt zich op het krijgen van een beter begrip van waarde co-creatie door een organisatieperspectief aan te nemen, in het bijzonder de theorie van *dynamische vaardigheden* (Engels: dynamic capabilities). Om zich aan te passen aan nieuwe technologische ontwikkelingen maken ES-vendors gebruik van dynamische vaardigheden. Met deze vaardigheden leren bedrijven nieuwe organisatieroutines en vaardigheden aan, en stoten zij verouderde organisatieroutines en vaardigheden af. De verwachting is dat ES-vendors die SaaS invoeren ook beter in staat zijn om tot waarde co-creatie te komen als zij sterke dynamische vaardigheden bezitten. Hoofdstuk Vier, getiteld "*A Dynamic Perspective on Dynamic*

Capabilities: The Case of the Enterprise Systems Industry Before, During and After the Introduction of SaaS," betreft verkennende studie naar de relatie tussen dynamische vaardigheden en waarde co-creatie. De studie start met een literatuurstudie waarin een conceptuele discussie over de eigenschappen van dynamische vaardigheden centraal staat. Er is een groep onderzoekers die bepleiten dat dynamische vaardigheden complexe organisatieroutines zijn, terwijl een andere groep onderzoekers bepleit dat dynamische vaardigheden juist simpel van aard zijn. Dit hoofdstuk levert ook een bijdrage aan dit debat door de twee zienswijzen zowel conceptueel als empirisch te verkennen. Om deze bijdragen te leveren is een vergelijkende casestudie uitgevoerd bij twee ES-vendors. De observaties in deze casestudie laten zien dat de verschillende, in de literatuur betwiste eigenschappen van dynamische vaardigheden zowel *tegelijkertijd* als *in verloop van tijd* (in de vorm van een transitie) kunnen voorkomen. Deze observaties tonen aan dat de betwiste eigenschappen van dynamische vaardigheden niet alleen tegelijkertijd kunnen voorkomen, maar ook in hogere mate samenhangen dan in de huidige literatuur wordt aangenomen. Deze nieuwe inzichten zijn vervolgens gebruikt om een beter begrip te krijgen van waarde co-creatie zoals die plaatsvond tijdens het invoeren van SaaS door de twee ES-vendors. De verschillen in dynamische vaardigheden in softwareontwikkeling zorgden ervoor dat de twee ES-vendors de invoering van SaaS op verschillende manieren inzetten voor waarde co-creatie. Eén van de twee ES-vendors vond zelfs een alternatief voor waarde co-creatie, namelijk door de vaardigheden rondom de technologie achter SaaS puur voor eigen gewin in te zetten in plaats van het gebruik maken van derden om zo waarde co-creatie te realiseren. De bevindingen zijn vervolgens gelinkt aan de resultaten uit Hoofdstuk Drie, waarmee een verbinding tot stand is gebracht tussen enerzijds het institutionele perspectief en anderzijds het organisatieperspectief met betrekking tot dynamische vaardigheden.

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Appendix A

Literature on the Telecommunications, Broadcast and Computer Industries Informing the Interpretation of the Figure 2.1

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Appendix B

Overview of Interviews

Firms	Interviewees Present	Position(s)	Interview Dates	Chapter Three	Chapter Four
Accounting Firms					
A1	A1(1)	Head of Automation	Feb. 20, 2012	X	
A2	A2(1)	CEO	Feb. 22, 2012	X	
A3	A3(1)	Director and Head of IT	April 13, 2012	X	
Banks					
B1	B1(1)	Product manager for the ERP coupling	August 7, 2012	X	
	B1(2) and B1(3)	IT architect and Head IT architect	June 29, 2012	X	
B2	B2(1)	Product manager for the ERP coupling	August 9, 2012	X	
	B2(2)	Innovation Manger	April 26, 2012	X	
	B2(3)	IT architect	October 8, 2012	X	
	B2(4) and B2(5)	Business architect and Head Business architect	June 27, 2012	X	
ERP Vendors					
ERP1	ERP1(1) and ERP1(2)	Technology Director Cloud Solutions and Product Line Manager [for ERP1's SaaS solution]	November 28, 2012*	X	
			Feb 26, 2014*	X	
			June 17, 2014	X	X
			July 5, 2015		X

ERP2	ERP2(1)	Director Architecture and Innovation	Dec 5, 2012*	X	
			March 25, 2014*	X	
			August 27, 2014	X	X
			July 3, 2015		X
ERP1 and ERP2 Workshop	ERP1(1), ERP1(2), ERP2(1)		October 12, 2011*	X	

**denotes workshop environment*

Pilot Interviews	**Interview Dates**
Accounting Professional in the Northern European Country	November 4, 2011
ERP Vendor Executive, Manager of SaaS Solutions	December 14, 2011
Workshop with ERP1 and ERP2	October 12, 2011

Appendix C

Institutional Preconditions Questionnaire Template

Institutional Preconditions	**Definition**
Regulative Domain	
Professional standards, rules, laws	The perceived importance of firms adhering to rules (typically enforced through national governments) to avoid legal and market consequences and further to uphold their legitimacy and benefits within their industry.
• Do regulations in your industry influence adopting and implementing SaaS? • When pursuing service integrations through SaaS with others outside of your industry? • Have you run into any challenges thus far? Please elaborate. • How would these challenges be approached?	
Implementation of technology standards	The perceived importance of adhering to technical specifications, either enforced by national governments (de jure) or made essential for advantage through market competition (de facto).
• What are your thoughts on [new reporting standard in the Northern European Country]? • How important is technical compatibility with partners within or outside of your industry? • Is it important, to be able to switch SaaS vendors / software in the future? Why or why not?	

Normative Domain	
The technology (capability) of a tie	The perceived importance of the potential technology-related collective strength with a potential tie.
• How do your customers respond to the functionalities, interfaces, options, of your SaaS offering(s)? What are you developing at present? • What are customers demanding? In terms of added value? Customizations? • What are the opportunities to add value through partnerships?	
The importance of utilizing a SaaS delivery channel	The perceived importance for a firm to seek value co-creation through a SaaS delivery channel.
• What is the percentage of services offered through SaaS? Do you anticipate this will change? • What is the current level of service integration (through SaaS) with partners of different industries?	
The professional relationships between ties	The perceived importance of the relationships between firm representatives in the alliances meant to support partners and their interactions with mutual end customers.
• How do you go about creating a service agreement with partners? • Do you proactively engage new partners or do they engage you?	
The importance of the positioning of a tie in the market	The perceived importance of the potential ties' customer base and overall market strategy.
• Do you have many direct competitors within your industry? Outside your industry? • Do you have any indirect competitors from other industries? • Which industries are you most heavily focused on increasing service integrations with? Why? • When seeking new partners for service integration, what are your criteria? • Are there specific criteria that partners must meet? • Do you acquire new customers from partners?	

The importance data security assurance from a potential tie*	The perceived importance of the extent to which ties are considered able to maintain the security of the end customer data.
*This precondition was discovered during the iterative analysis of the bank interviews; these questions were asked to the remaining bank interviewees and to the ERP interviewees. • How do you manage security issues and risks? • Do you work with third parties regarding security? • Do your customers have concerns about security management? • As service integration increases, how will security in partnerships be approached? • Is data security assurance on the partner's side of the connection important?	
Cognitive Domain	
SaaS adoption	The perceived importance of adopting SaaS.
• How do you view the role of SaaS in your industry? In 5 years? 10 years? • What was the initial switch to SaaS like generally? Operationally? • What possibilities and challenges do you see/experience, in providing SaaS services? • What is the pie breakdown of your concerns, regarding technical and business issues of SaaS?	
Pricing and business model change	The perceived importance of moving to a product-as-a-service pricing model.
• How was the change in pricing model determined (from the traditional software to the SaaS solution)? Please elaborate. • What is the breakdown of costs incurred between you and your partners? When services are integrated through SaaS? How is this determined? Do you foresee this changing? If yes, how so? • What criteria would be important, if the cost and revenue breakdown between partners were to change? • What is the breakdown of the added value created between you and partners?	
Capital Structure*	The perceived importance of the internal financial structure of the firm.
*This precondition was discovered during the ERP vendor interviews; there were no preplanned questions.	

Appendix D

ERP Vendor Questionnaire for Dynamic Capabilities in New Product Development

*Adapted from: Pavlou, P.A. and El Sawy, O.A. (2011). Understanding the Elusive Black Box of Dynamic Capabilities. *Decision Sciences*, 42(1), p. 239-273.

Instructions: "Please rate the effectiveness by which your work unit reconfigures its operational capabilities in the new product development process to address rapidly-changing environments relative to your major competitors."

Sensing

- How did you scan the environment to identify new business opportunities?
- How did you review the ways in which changes in your business environment were likely to affect customers?
- How did you review your product development efforts to ensure that customer requirements were aligned with customer expectations?
    - How intensive, and with which customers, did you review this alignment or misalignment?
    - Was this review process different for SaaS and on premise products?
    - Was there a difference between these reviews for new or existing customers?
    - Did this change over time and if so how?
- How did you allocate time to implementing ideas for new SaaS products and improving your existing on premise products?
    - Was the allocation of time varied between productive development and customer support?
    - Did this change over time?

Integrating

- How did you approach contributing individual input(s) to the group?
- How did you approach establishing a global understanding of each other's tasks and responsibilities?
- How did you approach establishing awareness of who in the group has specialized skills and knowledge relevant to your work?

- How did you inter-relate your actions to each other to meet changing conditions?
- How did you manage group members interconnecting their activities?

Coordinating

- How did you ensure that the output of your work is synchronized with the work of others?
- How did you approach positioning (or alignment of) new SaaS initiatives with the remainder of the company?
- How did you ensure an appropriate allocation of resources (e.g., information, time, reports) within your group?
- How did you make sure group members are assigned to tasks that commensurate with their task-relevant knowledge and skills?
- How did you ensure that there is compatibility between group members' expertise and work processes?
- How did you ensure your group is well coordinated?

Appendix E

Fact-Checking Questionnaire for ERP Vendors

Fact-Checking Questionnaire

We are interested in the decisions made with regard to your journey in creating, adopting and maintaining your SaaS offering(s). During our case study we would like to hold interviews related to the decisions made with regard to your 1. SaaS architecture, and multi-tenancy; 2. Strategic decisions taken in order to prepare for SaaS; and 3. Decisions made to accommodate organizational changes needed for SaaS such as support, sales, and so on. In order to tailor our interview questions for the upcoming meeting on [date], we would like to confirm some of our understandings about [ERP vendor's] current situation. Upon completion of this questionnaire, a follow-up call and/or skype to clarify any questions and to confirm some of the findings would be ideal. After the follow-up, an agenda overview will be sent out prior to the meeting. Thank you in advance, and please feel free to ask any questions at any time.

1. SaaS architecture

A) Please comment on the process of adopting SaaS, with regard to decisions made regarding the architecture for the SaaS solution(s). Please also comment on changes in the architecture over time, and the current architecture.*

B) Are there plans to change the current architecture in the near future? If so, why?

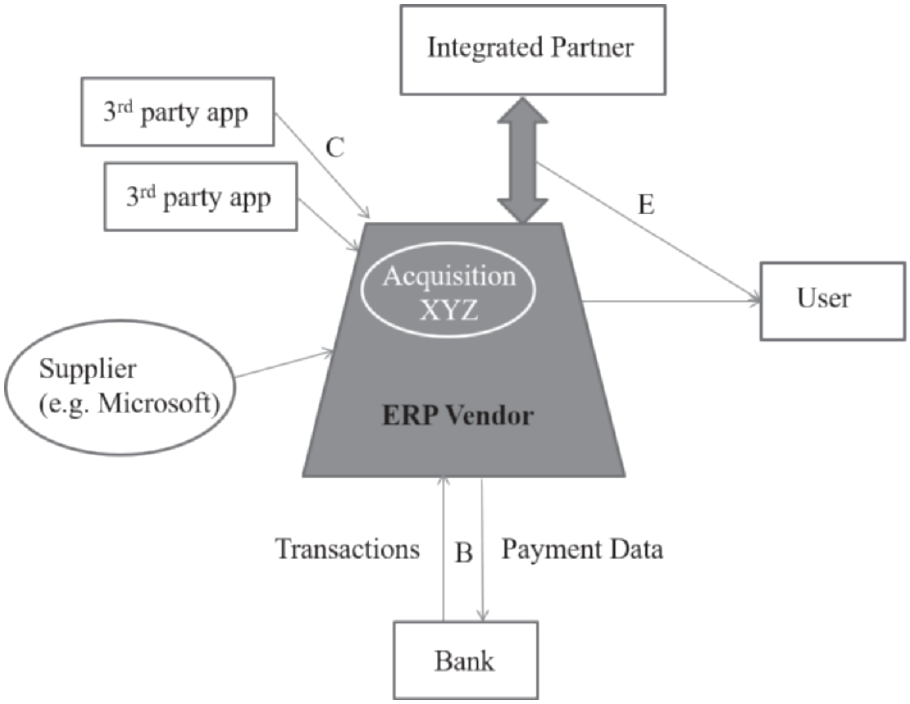
C) Please comment on the customizability of your SaaS solution(s) from the user perspective:
- Within the solution itself?
- Through API, third party or partner data connections?

D) What are the major advantages and drawbacks of the current employed architecture?

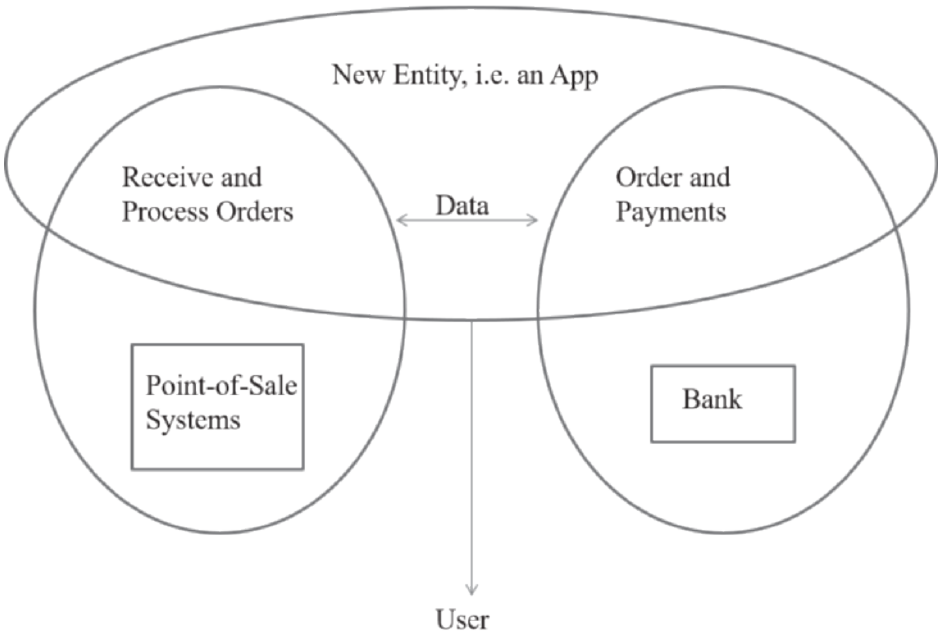
2. Software Supply Chain or "platform partners"

We are interested to know about connections to and from your SaaS solution(s). This is in regard to both content and software additions and enhancements. Examples could be third party connections, add-ons, service integration, API availability, acquisitions of other companies incorporated into the business and/or SaaS solution(s), software suppliers, and so on. These are represented in visual examples below. Our purpose is to get an idea of what your software supply network looks like (also see questions below the figure). Further, feel free to alter any of the images to better represent a partner relationship, and feel free to make use of another drawing program if desired.

Here is an example of a software supply network:



Example of E.



Below is a key for the displayed connections above. Please tick the boxes that apply for each type of connection. Please answer the following with ***your perception of [ERP vendor's] current situation as compared to competitors on average***.

A. supplier partners

☐ Many
☐ Some; please give examples:
☐ Few; please give examples:
☐ None

B. data connections (two entities providing services that enhance each other)

☐ Many
☐ Some; please give examples:
☐ Few; please give examples:
☐ None

C. parties who have added a function to the offering, e.g. API (one entity building on another entity's offering)

☐ Many
☐ Some; please give examples:
☐ Few; please give examples:
☐ None

D. acquisitions

☐ Many
☐ Some; please give examples:
☐ Few; please give examples:
☐ None

E. new offering entirely from partnerships

☐ Many
☐ Some; please give examples:
☐ Few; please give examples:
☐ None

F. another form of partnership not listed.
Please describe the other form(s) if applicable.

☐ Many
☐ Some; please give examples:
☐ Few; please give examples:
☐ None

3. Organizational changes

A) Our understanding is that the sales commission structure and/or sales culture were altered in order to accommodate SaaS adoption. Please comment on this.

B) How did marketing strategies, and thus the department, change from adopting SaaS up until now?

C) Please comment on other departments that changed due to incorporating SaaS solutions.

D) How are the traditional on premise software part of the business, and the new SaaS part, balanced?

*more technical technology-related questions were removed from this table as they reside outside of the scope of this dissertation, and were in collaboration with a partner university on a larger project.

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Value Co-creation in the Cloud

Understanding Software-as-a-Service-Driven Convergence of the Enterprise Systems and Financial Services Industries

Enterprise systems software is increasingly hosted in the cloud and offered as a service, which is known as the Software-as-a-Service (SaaS) business model. Financial services firms are also adopting SaaS and are revamping the way they deliver certain services to their customers. In addition to the possibilities of the SaaS business model for individual businesses, SaaS also enables cross-industrial collaboration and technological evolution—also known as the convergence phenomenon—since it makes establishing connections between services from different companies, and even from different industries, easier. This opens doors to value co-creation, when firms among the enterprise systems and financial services industries partner to create added value for customers by connecting and integrating services. A new SaaS-based market is emerging as a result. This dissertation explores SaaS-driven value co-creation occurring in the enterprise systems and financial services industries from institutional and organizational perspectives. The influence of the institutional contexts firms subscribe to before entering the SaaS-based market on value co-creation is explored with institutional theory. The influence of a firm's organizational adaptability while implementing a new technology, such as SaaS, on value co-creation is explored with the dynamic capabilities perspective. A key empirical finding is that institutional contexts and dynamic capabilities influence a firm's value co-creation strategy and convergence phenomenon trajectory. This dissertation makes theoretical contributions to both perspectives, and to the greater understanding of the convergence phenomenon, through a literature review and qualitative case study research. Additionally, this dissertation identifies linkages between institutional theory and the dynamic capabilities perspective.

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